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Journal of The Southern Medical Association

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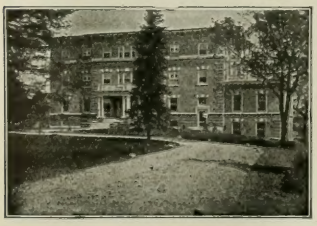

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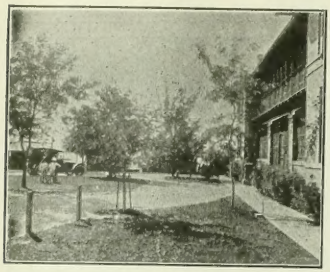

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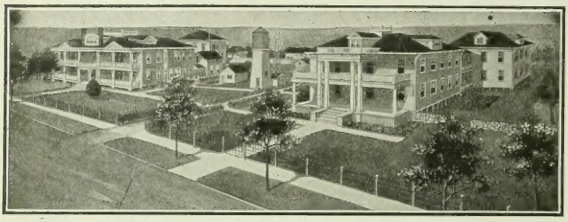

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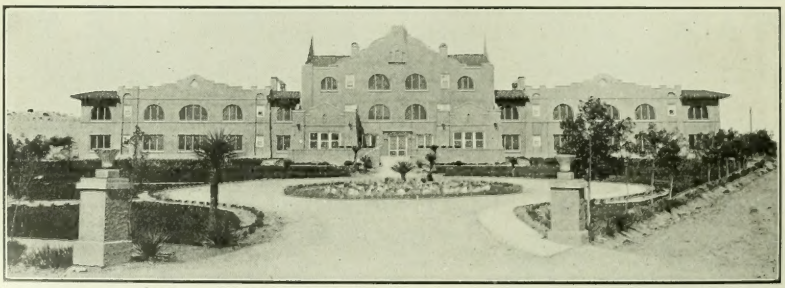

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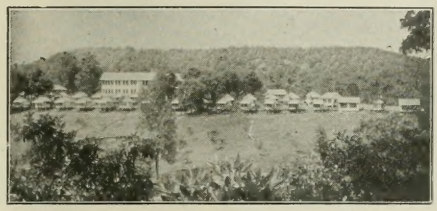

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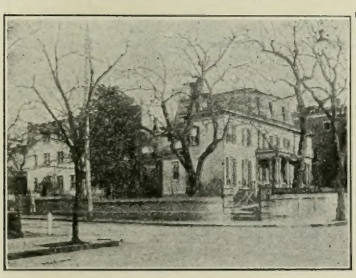

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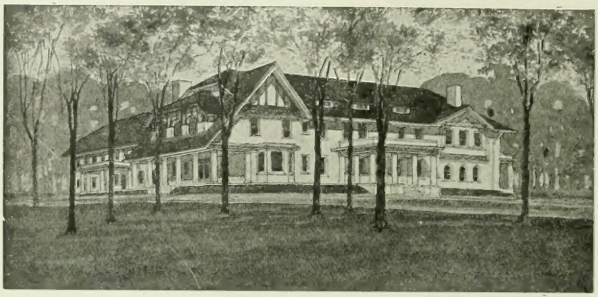

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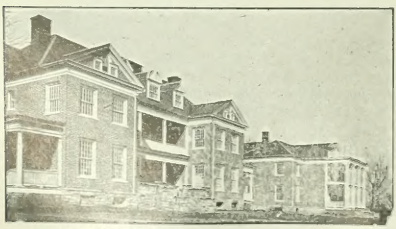

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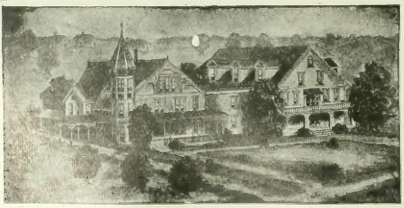

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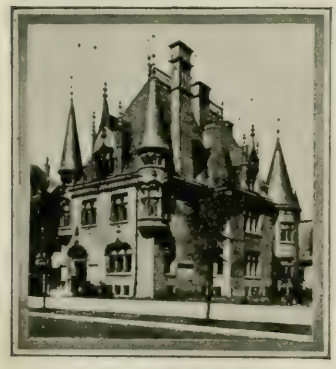

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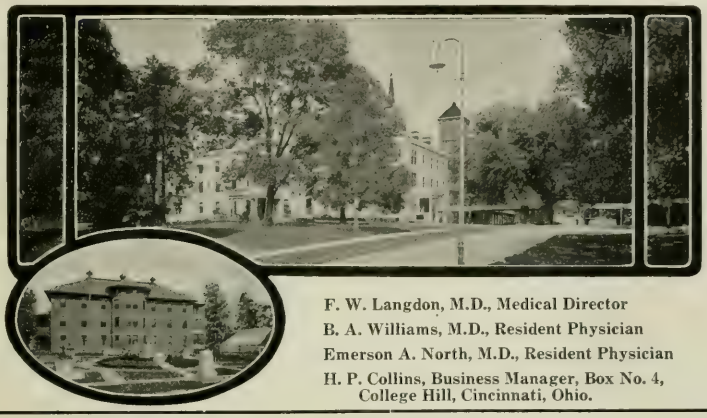

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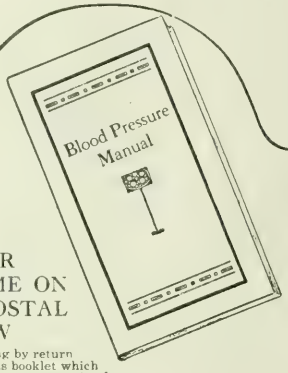

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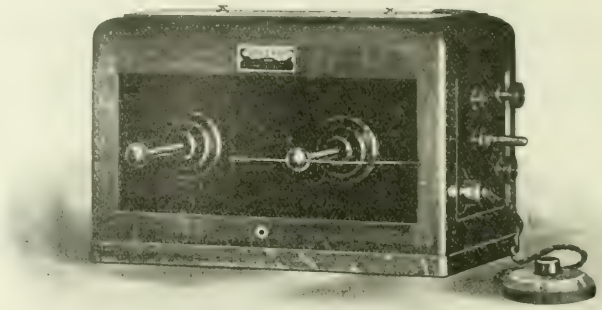

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CORRELATION OF LABORATORY AND CLINICAL TEACHING*

By George Dock, M. D.,
St. Louis, Mo.

The title assigned me recalls the time, not long past, when laboratory teaching was supposed to be the antithesis of clinical teaching, or when they were looked upon as rivals,—sometimes as rivals with a great difference in respectability if not in importance. In the only correct view, all means of increasing knowledge of morbid processes and their means of recognition, prevention and cure are equally respectable. They vary necessarily in importance; but this is not a matter of moment, since they all vary in value in different kinds of cases. By correlation, then, we mean the sequence or order in which the various part of diagnostic work will articulate in the schedule of the medical school.

In arranging this schedule many problems will arise, just as they arise in many other parts of the same task. As to the main features, little trouble need arise. Many laboratory lines should be, and in the best schools are now, cultivated first in the laboratories of the fundamental branches,—physical methods, such as the use of the balance, the thermometer and the manometer, in the physical laboratory; chemical manipulations and chemical principles in the laboratories and lecture rooms of chemistry; microscopic methods in the laboratories of embryology and histology; bacteriological methods in the laboratory of bacteriology; and physiologic and pharmacologic methods in their appropriate places.

In all these, not so much facts, as methods of investigation will be striven for, but the acquisition of facts, as well as of manual and mental dexterity and accuracy will follow inevitably. In other words, no effort will be made at this early time to teach so-called medical physics, chemistry, etc. Not only will no loss result from this method of beginning laboratory work, but positive gain will follow. To take an example, it is not likely to happen often in the future, as it has in the recent past, that respectable medical journals will publish articles showing that the specific gravity of fluids depends partly on the temperatures of such fluids at the time they are tested. As soon as the essential principles have been mastered and the manipulations acquired, clinical branches are taken up and studied in ways not necessary to detail. But before the fundamental sciences can be accurately directed to the purposes of the clinic something more must be done.

The transition from normal to pathological involves many phases not covered in the scientific laboratories of the early period, and to have the student work out the connections himself would involve serious loss of time and risk of all the dangers inherent in the process of self-teaching. It is not necessary for all students of chemistry to be familiar with the peculiarities of tests for albumin in urine, but

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the medical student can work to advantage if he has some practical experience in that line. The student of normal histology, of course, can study all possible blood cells, or renal casts, but he can also get such knowledge far better in a special course. So, too, the examination of sputum, of stomach contents, stools and exudates belongs to a special domain. Hence the necessity for courses in clinical pathology, in which the above lines and others may be followed.

Here the transition from normal to morbid is made; here the peculiar difficulties of the subject are first met and are overcome, if need be, with advice and assistance; and here a large body of knowledge, often needed at short notice in the daily work of the physician, is acquired. No idea is entertained that in such a course experts are made. Expertness in technic can be secured to some extent, but not the required automatic dexterity that only comes from repetition, nor the wide experience with clinical material essential to the genuine expert. These other things are learned in various parts of the clinical course, and especially in the laboratories of the out-patient department and the wards, guided, criticised and enriched by the study of the literature.

It seems to me that there are other ways of getting at the problem. One that is being employed in some schools can be practiced everywhere, and that is introducing the student indirectly to clinical medicine from the very beginning. Through the medical society, for example, much can be done by having always a mixed program and also by taking actual patients in at the beginning of the program and discussing their cases. The man in his first or second year can then see how in any case,—it makes no difference whether it be medical, surgical or what not,—there is not only the opportunity but the need of applying all the abstruse things that he is plaguing himself about at that time and very often thinking that they are never going to do him any good at all. It seems to me that since I have been working with men who are doing this, the students do not come over into their clinical year with the statement that they do not remember this or that anatomical, physiological or chemical point because they did not think they would ever use it in medicine.

Another point I think is important, and that is the mingling of students of all ages outside the medical school, in fraternities, living clubs, in dormitories, unions, or things of that kind. By the mixing of interests and by such affiliations early students and older students can get along very well, in my opinion. We learn much in the medical fraternity where the opinions of the older men affect the others at the very beginning, I think, in an admirable way.

The place in the curriculum of such a course is evidently at the time of transition from the fundamental sciences to the clinical branches. Here, at the present time, a difficulty arises. In some schools this change takes place in the second medical year. About the middle of this year, given proper premedical work, the student is fit to take up theory of clinical medicine and surgery, to prepare himself by taking courses in the technic of physical diagnosis, and very soon to work with sick people. But in the arrangement of the schedule many medical schools postpone the change to the third year. This involves a loss of time, and in some cases, as in students who are obliged to migrate to obtain clinical training, causes a serious break in the graded course. The correction of this difficulty should be made as soon as possible.

Here I would like to digress for a minute. We turn men with this sort of knowledge into the out-patient department, and there they work chiefly in the laboratory, that is, they make analyses of the urine, stomach contents, and blood. They do these always under supervision, that is to say, of the clinicians on duty, and other men, interns, for example. They go into the fourth years then perfectly competent to do even a difficult differential count; or if they have trouble, they know enough to call upon someone else for advice. They have reached that point where they realize that there are fields unknown to them.

Correlation involves not only considerations of time, but also of kind of instruction. Who shall teach courses in clinical pathology? In my opinion only those who have had sound and adequate training in laboratories and clinics and who have a fair acquaintance with the literature of the

subject. Those with only laboratory experience have neither the appreciation of the peculiar importance of clinical work nor the requisite technical skill. I am able to demonstrate every year that a man does not necessarily become a keen investigator in the study of the phenomena of the laboratory alone. He is very likely to make a great many mistakes that can be shown by the clinician. He has not discovered the necessity of a constant criticism, such as the clinic reveals daily. I have known such a man teach that sugar tests must always be made when diabetes is suspected, with the further view that this was not necessary in every case. Almost as a rule such teachers cannot recognize the traces of albumin so common in medical practice. Of course, one cannot do everything, but one of the things the clinician must learn is what tests are always necessary, and which ones are to be applied only occasionally. The influence of the pure laboratory man is also seen in taking specimens for tubercle bacilli stains out of a cup with a hat pin or a platinum loop, shooting in the dark, in other words, or getting a centrifuged sediment on a slide by pouring off the fluid and then letting the sediment run down the side of the tube.

Such a teacher need not be old, but he must be old in hours in the Baconian sense, in that he has used them well. It is hardly necessary to say that such an activity at an early stage of a clinician's career is the best mode of entrance to more responsible positions either in practical or academic life, and that investigation and an enthusiasm for skill and knowledge are essential.

From the time this course is ended the student should do all the laboratory work required in the study of his cases. In this way he acquires such a facility that he can do all the routine work quickly and accurately, that he knows when he has a strange finding, and that he can easily take up newly discovered methods either from reading or from seeing them done by others. In this later clinical time he also has time to learn something of the more subtle reactions, chemical or serologic, as well as to make some original investigations himself. Very often the undergraduate thinks original investigation means only the search for things never heard of before. He should be made to realize the vast field open either to new methods of research, or new interpretations through the use of old ones; to know the value of the little more.

Laboratory and clinical methods are practically all alike. They must be used together, and can with great advantage be practiced together. Sometimes one, sometime as no other is most valuable, and the old question as to the relative value in general is as dead as the doctrine of the four elements.

DISCUSSION

Dr. Gordon Wilson, Baltimore, Md.—I think, undoubtedly, we all realize we are trying to do too much in undergraduate medical teaching. As has been pointed out, the first fundamental idea in a medical school should be to train men for the practice of the profession, and a fundamental impediment to this is that we have entirely too short a time in four years to accomplish it. It is, therefore, necessary that we should teach those things which are absolutely necessary, and tech them *thoroughly*, rather than to teach the technicalities of the specialties. Thoroughness is undoubtedly the essential object, thoroughness in the laboratory work, as well as the clinical. The more thorough training you can give the student in medicine, both clinical and laboratory, the better specialist you will make him, should he eventually desire to become one.

For a long time I have desired a means to make medical students realize the close relationship that should exist between the laboratory and the bedside; and to demonstrate this I have planned to have a laboratory table on wheels like the surgical dressing table which could be brought to the bedside in teaching and have the routine urinary examination made, and also the examination of the fresh blood done as the case was studied. Clinicians who have been *thoroughly* schooled in laboratory work know that the examination of a fresh or stained specimen will show to the trained eye whether there is need of a leucocyte count, or a differential count, and while it is advisable in hospital practice to require more or less complete studies of the blood in all cases, yet in private practice to do so would mean frequently unnecessary labor, which if paid for by the patient means an unnecessary expense to him. I personally believe that it is our duty to save our patient from spending his money on something which is of no use to him, and only of use to us at times in "completing our records" and satisfying our scientific curiosity.

In the teaching of clinical medicine in the clinical years (third and fourth) too much time can hardly be given to the teaching of "history-taking" and its interpretation, the complete examination of the patient (including ophthalmoscopic, blood-pressure examination, etc.), laboratory examinations, and the gross pathology of disease. The more these subjects are correlated, the better they are taught, and the better the physician who is graduated.

Dr. Kenneth M. Lynch, Charleston, S. C.—We have talked a great deal in recent years of a division, of a gap between the preclinical and the clinical course which it is considered to be desirable to bridge. I have wondered if we have not exaggerated the existence of this gap and if it is a natural division which we cannot expect to bridge completely, and how much of it is a broadening of a natural division due to our own personal faults in teaching. There is a natural division between the courses of normal anatomy and pathological anatomy. There is the same division between the courses of pathology and applied pathology in the clinics. To that extent the division is natural. However, the fact that we have to consider the existence of a gap which we want to bridge, signifies that this gap is more than a natural division. Now I believe that you will find the gap wider in some institutions than in others, and that the wider the gap the more inefficient are the teachers of that institution. I have often wondered whether, and if so when, a school or course for the preparation of the medical teacher will be instituted.

Dr. F. L. Parker, Charleston, S. C.—It has been suggested that the teacher of theoretical branches should emphasize the relation of theory to practice. If this is not done, as it appears not to be in some colleges, I think it is due to the fact that the teacher is not familiar with the general principles of medicine. If the theory teacher, so to speak, or teacher who is teaching only theoretical branches such as chemistry, bacteriology and histology, has had training in the general principles of medicine he will be able to present to the students the applications of the principles which he is teaching. If he has had no training in the principles of medicine, it is hardly to be expected that he can advise his class as to the general application of these principles in medicine.

Personally, I think a principle or theory of little value to the student of medicine unless he is familiar with its application; and to place value on the principles their application should be mentioned along with the principles. To take a simple illustration, suppose we put a pure physicist, who has had no training in medicine, to teach a medical student, and he is asked this question: "Of what value are the various rays in the practice of medicine?" It is quite evident that the pure physicist, never having studied any medicine at all, and knowing nothing about applications in medicine, could hardly be expected to answer the question; and yet when we present to our students the theories of light, it is certain that the students should be advised as to their application. After all what he is interested in most is the theories which have application in medicine. In other words, he is studying light in its application to medicine, and not light as a division of mechanics.

That is all I wish to say in this connection, and I [illegible] to emphasize what I stated at the beginning; that if there is a lack of co-ordination between [illegible] branches and practice, I think as a general rule the lack is due to the fact that the men teaching the theoretical branches have not prepared themselves adequately in the application of their branches, or have had no adequate preparation in medicine themselves, which would enable them to present in a general way the applications of the principles which they are teaching.

I am not advocating the teaching of theoretical branches by internists and surgeons, but I am advocating that teachers of theoretical branches should be informed as to the general principles of medicine and surgery, and have had some training in these branches.

A Member.—It seems to me Dr. Gordon Wilson brought up a point that ought to have another remark or two made upon it. Chancellor Kirkland had a clear outline of the subject, but it seems to me he devoted most of his time to the analyisis of the misdoings of the Council on Education. I dare say if Dr. Witherspoon and I had remained on this Council longer his remarks would not have been so severe, but we could not help the backsliding that occurred on that board after we got off. However, is it not a fact, as Dr. Wilson stated, that two good years are lost out of the student's life? Now that fact has been known for a long time. We have been pushing medical education forward in the last two years. But before that we found that college education was time-consuming, having brought out too many texts. For some time President Lloyd has been talking and writing about that,—as long as I remember. As far as I know, the colleges and secondary schools have not done a thing to concentrate the study in periods, and I know numbers of universities in which the colleges of arts have refused to do anything at all to shorten the period of undergraduate study. That would lose easily a year in the arts departments in all universities, and they use one or two years in the secondary schools,—that is, at the end of the high school. Now I believe it would be easier in the South to meet that condition than it has been in the North. In the North things are much more settled. It is much more difficult to introduce a change. The South has shown itself much more respectful of new ideas and much more able to introduce and test methods than the North; and it seems to me that much more can be done. It is most instructive to us that universities and colleges have refused to take any steps to facilitate the pre-medical studies. I have seen that state of affairs exist in universities with which I have been connected. We could do better with outside schools than we could with our own faculties in getting them to prepare men for a medical course. It seems to me if we could induce more educators, such as Chancellor Kirkland, to meet with us and discuss things that are necessary, a great deal more could be accomplished.

Dr. Dock (closing).—The suggestion proposed to make reactions in the ward work is a very good one. It is done sometimes. I think an even better one is to have a real laboratory. In the hospital I have worked in for some time we have a laboratory room 24x14 with windows all along the north side equipped for microscopic and chemical work, across the corridor from each ward. The men who do the ward work on the patients are constantly working in the laboratory, and in all cases of doubt, for example, in a doubtful albumin reaction, we simply go across the corridor and there see the exact situation.

I do not suppose it is necessary to take up the

argument just opened by the last speaker, but I think he is absolutely wrong. I think the important thing in the early branches is to teach them scientifically and to practice the usual technique and let the other things go. No man who devotes himself to a theoretical branch like anatomy, physiology or chemistry can keep up his medicine. I think it is just as bad for the teaching of his branch to dabble with the clinical applications of things as I think it would be for a professor in medicine who has not done, let us say, any work in physics, to wander off in the discussion of obscure physical principles. I think the point of expertness comes up here, and one can see sometimes how professors of medicine have failed because they like to talk much about physiology, physics and chemistry ten or fifteen years behind the times.

SIGNIFICANCE OF HYPERTENSION*

By C. W. Strickler, M. D.,
Atlanta, Ga.

This subject will be dealt with almost entirely from a clinical standpoint, as there is so much in the literature that is confusing, and there are so many theories that are not supported by proper clinical data, that the clinician, if he is not careful, is apt to treat the condition and not the cause, the disease and not the patient.

Hypertension is a symptom that has been too little appreciated by the medical profession,—mainly because we have trusted too fully to an educated finger and used too infrequently instruments of precision. Much has been written about high tension in cardio-viscular-renal disease, and in many instances a significance ascribed to it that is misleading and not based upon clinical experiences. When this symptom is present, it is significant of disease, and it is our business to find out if possible the causative agent. It is present in a number of conditions, and to absolutely name the causative factor is no easy task. However, from my reading, clinical experience and that of many others, it would seem to be caused by some toxemia or intoxication, and it "constitutes a vascular reaction" to the presence of these poisons.

Bright's disease and arteriosclerosis are regarded by many as independent conditions. Either one may occur without the other. We know how frequently normal or low tensions occur in well marked cases of arteriosclerosis. So it would appear that hypertension was not caused by these conditions, as it should always be present when they exist. However, it is quite likely influenced by them.

It is a little more diffcult to explain its relationship to nephritis. We know that in parenchymatus nephritis the tension is often normal, but that in other forms of nephritis a high tension is usually an accompaniment of the disease; and often this one symptom leads to its diagnosis. However, there is abundant evidence that the same thing that causes the nephritis may cause hypertension and the reverse. I believe it is now generally accepted that there is a pre-nephritic and a pre-sclerotic hypertension.

Now let us begin with the simplest causative factors of hypertension and trace this intoxication theory and see if it is not reasonable, if it is not common sense, and if it is not the experience that we have all had clinically. Fear, anger, excitement, worry, over-eating, muscular exercise, pain and mental effort are among the temporary causes of this condition, and it is not difficult to see how the more or less continuous action of one or more of these may cause a hypertension lasting throughout the day. And if, as some claim, after the first few hours of sleep the tension gradually rises until morning, we have as a result an almost constant hypertension. How often these cases awake during the night or early in the morning with headache, is a fact with which we are all familiar. This signifies the beginning of some auto-intoxication, which is usually, to begin with, of an intestinal character. This adds to the chain the necessary link to form a vicious circle, which will keep up this high tension, and these causative agents, not the hypertension, will eventually lead to changes in the kidney, and in all probability to changes in the vessels. You may claim, as Allbutt did about the Frenchman, that this is a wild theory that cannot be substantiated. However, in answer to this it might be said the evidence presented by clinical fact is the result we must depend upon to support or disprove this theory, whether we can or cannot explain the manner in which it

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works. If I had time I believe that I could present sufficient evidence at least to make this appear reasonable to those holding even an opposite view. I shall only, however, mention two cases in support of this theory.

Case I.—A physician about thirty-two years of age, with nothing in either his family or past history of any importance, a man who had always been well and had no disease to cause a nephritis. However, this man was a very hard worker, a hard student, and worked constantly under high tension. He had in his urine the presence of a large quantity of indican and skatol. One day after taking violent exercise, to which he was unaccustomed, he became very ill, his blood pressure was very high, and he showed the presence of albumin, hyalin and hyalo-granular casts, and a most pronounced reaction to indican and skatol. The acidity of the urine was 95. He remained quite sick for a few days, the arterial tension remaining high. Under treatment he cleared up, except for the indican and skatol. After several months' treatment this to a large extent disappeared. He is now enjoying good health; his arterial tension is about normal; he has learned how to work and take care of himself, and although his work is very heavy and somewhat taxing, he seems to be a well man, and feels better than he has in five or six years.

Case II.—A lawyer, fifty-five years of age, who had worked very hard and under high pressure for a number of years. He was a moderate user of alcohol and tobacco; a fairly good eater, and took a full protein diet. He became profoundly toxic, suffering with the characteristic symptoms.

Blood pressure of 169. Under treatment he gradually improved, and the other day, five years afterward, I had occasion to examine him because of a slight myalgia of the left arm. Because of his former condition, I made a complete examination of this patient, and now at the age of sixty years he is active, enjoys good health, and plays golf without the slightest discomfort. There is not the slightest evidence of nephritis. His peripheral vessels are not thickened, and he has a systolic pressure of 125.

These two cases will serve to illustrate the effects produced by this kind of life plus an intestinal putrefaction. I could add to these two many others that behaved in a similar manner. Right here I would like to call particular attention to the hypercidity of the urine. In cases producing symptoms it is nearly always present, and these cases improve just as soon as it is normal. If the acidity is very high, these cases may have convulsions and a very high tension. I have seen four such cases, in all of which the acidity was above 95, and all presented evidence of toxic degeneration, of the kidneys. They are all when last seen symptomatically well, and I have no doubt, if they carry out directions, will remain so if there is no mechanical factor in the intestinal tract, such as kinks, adhesions or chronic appendicitis and similar condition. If these cases are treated properly all evidences of the trouble disappear, and in my longest cases, about eight years duration, where directions were followed, have shown no further evidence of trouble.

It certainly seems reasonable that if these cases are let alone they would eventually develop those kidney changes which we speak of as Bright's disease. If this be true, these severe cases are fortunate, because they come under the care of a physician in time to prevent the kidney changes taking place. I am quite satisfied that the milder cases go on until there are actual structural changes before they are aware that all is not well. I have seen such individuals without any other reasonable etiology that wonderfully improved under treatment addressed to the relief of intestinal putrefaction.

In addition to what has just been mentioned, it is not unreasonable to suggest the possibilty that in many of these cases the over-production of waste products, changes in the thyroid and the hyper-secretion of the suprarenals may come in as causative factors.

We are all aware of the very acute illness which usually follows violent muscular effort in those unaccustomed to such exercise, and it is not unreasonable to suppose that even in those indulging in continuous muscular effort enough poisons may be manufactured to give rise to hypertension, and in conjunction with other auto-intoxications eventually to present the clinical picture already described. This occurs in the case of brain workers; so why not in the case of laborers?

It seems to me that it is more than probable that Allbutt's hyperpyesis is an intoxication of some kind. The fact that they have associated with their hypertension frequent attacks of headache, depression and malaise cannot be satisfactorily explained by capillary resistance in the splanchnic vessels, by change in the capillary bed, by hypersecretion of the suprarenal glands, or as being indicative of early nephritis. These conditions do not give rise to such symptoms, but auto-intoxica-

tion does, and when relieved there is a relief of symptoms. However, it is reasonable to suppose that without such symptoms hypersecretion of the suprarenals as a result of worry and severe strain might cause this condition.

It would appear that the hypertension in the involution process of old age is due to auto-intoxication plus the toxines from the infection causing Riggs' disease, and in men diseases of the prostate, and similar conditions influenced to a marked degree by the thyroid and possibly to some extent by the suprarenals. It may be that when the absorption goes too far we have a hypotension, and this may account for those cases of senility in which the tension is not very high. The length of time it takes for the changes to take place depends upon the tissues that have been inherited, the manner of life and the degree of resistance in each individual case.

The hypertension caused by the presence of pus is also most important and interesting. With these I have had some experience. A typical case I will relate:

Mr. H. C. has been a patient of mine for some years, and I was well acquainted with his physical condition, having treated him some years ago for a mild intestinal putrefaction and subsequently for several minor illnesses. Some months ago he presented himself at my office, complaining of the usual symptoms of hypertension, in addition to which he was suffering with a very severe headache. Upon physical examination there was nothing to be found except a systolic pressure of 170, and the presence of a trace of albumin, hyalin and hyalo-granular casts and a moderate amount of indican and skatol in his urine. No treatment that I tried benefited this patient in the least. The nitrates absolutely failed to relieve his headaches, and as the ophthalmologist and rhinologist had failed to find any cause for these headaches, I on account of a former experience sent him to a dentist, although his teeth and gums looked healthy. The X-ray plates revealed the presence of one or more apical abscesses. This condition was corrected. After a few days, following the treatment by the dentist all his symptoms disappeared, and he has remained well until the present time, having received no other treatment for the alleviation of his trouble. His systolic pressure is now 120.

I could relate similar cases in connection with diseases sinuses, Riggs' disease, etc., bility of a nephritis and, therefore, is most

Hypertention may be the first symptom that attracts our attention to the possibility of a nephritis and, therefore, is most important in its relationship to this disease. It, however, is not due to kidney changes, but increases just as soon as an extra dose of poison accumulates as a result of defective elimination by these organs, and usually decreases if proper elimination is established. This is very clearly shown in the gradual and sometimes very sudden increased tension accompanying and preceding the uremic state and the drop when it is over.

How much hypertension is influenced by arterio-sclerosis is a much more difficult problem to solve. For example, there are many cases due to a luetic infection that present no hypertension at all. It may be true that other cases of arterio-sclerosis may be due to the same cause that produces a hypertension or to some other agent acting at the same time, and this might account for its more frequent association. I have talked to some able clinicians who hold this view, and whether theory or not, it is not altogether unreasonable to look at it in this way, when these cases are so markedly benefited by treatment along these lines. So it would appear that in many instances the high tension is an associated condition, due to some nervous or toxic agent and can be relieved or ameliorated by suitable treatment. It seems to be pretty generally accepted that arterial tension is not increased by sclerosis of the peripheral vessels. So I am inclined to the view that arterio-sclerosis as a disease influences hypertension only after the vessels have lost to some extent the power to contract or dilate.

There are cases of hypertension associated with vascular-renal disease that appear absolutely to fail to respond to any form of treatment. The patient has had complete rest in bed, a proper diet, all sources of known toxemia have been removed, the peripheral vessels seem soft to the palpitating finger, and yet when the systolic pressure is taken we are often surprised to find it registering the same as it did before the treatment was begun. We have all met with such disappointments and this is the one condition that at one time almost convinced me that the toxic theory was wrong. However, I began to watch these cases carefully, and have noted that under such circumstances the radicals seem small. It has occurred to

me that the probable explanation was found in the fact that some toxic vasoconstrictor was still at work, remembering the fact that in some of the ordinary hypertension cases it takes months to secure lasting results. I suspect the trouble is due to our lack of knowledge, rather than to the fact that the plan of treatment is wrong.

The following case illustrates fairly well this type of patient and what can be accomplished by persistence:

Mr. W. consulted me about two years ago and a well defined case of interstitial nephritis and arterio-sclerosis was discovered. Walking up steps or rapidly on the level produced a mild attack of angina pectoris. He was very toxic, had large quantities of indican and skatol in his urine, systolic pressure about 185 and in spite of treatment remained about the same for months. However, his anginal attacks became less frequent and severe and he felt so much better he stopped coming to the office. Several weeks ago he appeared and told me he had been feeling so well and had been sticking to his treatment, so he did not think it necessary to see me. I still found casts in his urine but his vessels felt softer and his systolic pressure was 150.

Do we watch these cases and make them persist in treatment long enough?

I can readily understand when the kidneys become permanently defective, that we may have a source of toxemia that may keep up a permanent but variable hypertension.

CONCLUSION

1. It seems possible for worry, mental and physical strain to keep up a moderate hypertension.

2. Of all the theories advanced as a cause of hypertension, the toxic seems most rational; and while we cannot explain the manner in which it acts or name the agents, we possess the clinical evidence that they respond more quickly and remain well for a longer period of time when this condition has been relieved.

Hypertension is neither a cause of nephritis or arterio-sclerosis nor is it caused by them, but is associated with them and may be influenced to some extent by them.

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RENAL FUNCTIONAL TESTS*

By J. T. Geraghty, M. D.,
Baltimore, Md.

In recent years there has been a rapid advance in the methods of estimating functional capacity of organs in health and disease; and the methods for estimating the renal function have probably developed to a higher degree than methods for estimating the function of any other organ.

It is now recognized in diseases of organs that it is not so much the variation in the anatomical structure which is important, but rather the reduction in power of the organ to functionate properly. While in the average case the reduction in functional power is roughly proportional to the degree of anatomical change, it is well known that gross anatomical changes may be present in the kidney with comparatively little disturbance of function, while on the other hand the most profound functional derangement may be present when the visible anatomical variations are extremely slight.

The frequent failure of routine chemical and microscopical methods of examination of the urine together with the data ob-

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tained from a clinical study of the patient to reveal the true extent of the renal disorder is a matter of common knowledge. Albumin and casts may be absent from the urine in cases of severe renal diseases, while they may be present when no serious involvement of the kidney itself exists, but where the kidney is simply suffering secondary to disturbances which are going on elsewhere in the body. An attempt to surmount this difficulty has been made by introducing quantitative estimations of the excretion of the normal urinary constituents, such as urea, phosphates, total nitrogen, etc. But this has proven disappointing because of the fact that the amount of these substances secreted depends not only upon the functional capacity of the kidney, but upon the amount of the substance conveyed to the kidney for excretion.

In order to make the data concerning the excretion of these substances of any true value it is necessary to know the intake of salts, proteins, etc. In other words, it is necessary to undertake extensive metabolic studies. Even such studies have often failed to furnish the information desired.

Until quite recently the employment of functional tests was confined almost entirely to the urologist, who used them to determine the relative function of one kidney as compared with the other. That he derived information of great value from their employment was generally admitted, and it was also freely admitted that in bilateral renal disease where grave surgical attack upon either kidney was contemplated a knowledge of the function of each organ was essential unless unwarranted risks were to be taken. While it was generally conceded that a knowledge of the function was important in surgical disease of the kidney, it seems rather strange that it should be so slowly appreciated that functional tests could furnish valuable information in so-called purely "medical" disease of the kidney.

The number of functional renal tests is now so large that it is impossible to use all of them in any individual case, nor is any information of practical value to be gained by the employment of all of them. Certain tests, such as lactose and the chlorids, prove of great value to the internist, but are practically valueless from the standpoint of the surgeon. Sometimes tests are valuable for the estimation of total function, but cannot be used in conjunction with ureteral catheterization. Other tests may be of no value for the estimation of total function, but may be very valuable in conjunction with ureteral catheterization for estimating the relative functional ability. For instance, urea estimations of the twenty-four-hour output give, as a rule, information of but little value, but urea estimations of catheterized specimens give a very accurate idea of the relative amount of work done by each kidney.

Renal functional capacity is usually ascertained in one or two ways:

First, tests of excretory capacity from the quantitative determination of the excretion of various substances in the urine; second, tests of retention, from the determination of the concentration of certain substances in the blood,—cryoscopy, blood urea and total nitrogen being the tests most generally employed.

Studies of renal function in medical cases fall into two great groups: (1) those attempting to differentiate between tubulous and glomerular involvement, and (2) those attempting to determine total function. Glomerular function, according to Schlayer, is indicated by the excretion of water and lactose, and that of the tubules by salt and potassium iodid. Lactose and potassium iodid, both being substances foreign to the body and hence not so easily influenced by extra-renal factors, have been considered to be more reliable indices than salt. Schlayer and his co-workers, from their studies of the lactose, salt, water and iodid tests, have attempted to divide nephritis from a purely functional point of view into four groups—purely vascular, vasculo-tubular, tubulo-vascular and purely tubular. The evidence to be found in the literature for the assumption that lactose is chiefly excreted by the glomeruli is not convincing, and experiments carried out on frogs' kidneys have demonstrated beyond doubt that the tubules are capable of excreting lactose.

Our studies have led us to the conclusion that the potassium iodid test, as used by Schlayer, and in which he has placed the greatest confidence, for indicating tubular functional capacity is unreliable. We have not encountered any cases of pure tubular

nephritis. When both systems are involved we do not feel that the test can determine whether the tubular or vascular injury is preponderant. Mild passive congestion alone in many instances produces the same functional picture which Schlayer describes as characteristic of vascular nephritis. Consequently a combined clinical and functional study is essential in order to differentiate two functionally similar but clinically different conditions. At the present time so little is positively known or proved concerning the specific function of any individual part of the kidney that any attempt of the kind mentioned to classify nephritis as above mentioned is premature.

All of the information furnished by the lactose test can be obtained more simply and reliably by the phenolsulphonephthalein test. It has, however, one peculiar field of usefulness, namely, in the very mild types of nephritis occasionally encountered in which difficulty arises in deciding as to whether the condition is really a mild nephritis or a functional albuminuria. In this type of mild nephritis the 'phthalein excretion may be normal, the tests of retention are negative, but the lactose will show a delayed excretion. The lactose test may be accepted as an index of vascular disturbance, but a decreased lactose does not necessarily mean a glomerular nephritis.

There are three tests of renal function which are more or less in general use today. The simplest of all of these is probably the water or polyuria test. This was introduced many years ago by Albarran for the study of the separated renal function, but can be equally well adapted to an estimation of the renal function without the use of ureter catheters. The test is based upon the fact that normal kidneys possess the ability to concentrate the substances extracted from the blood and that there is a definite limit to this concentration beyond which the normal kidney cannot go. A concentration of urea in the urine of more than forty grammes to the liter is seldom reached by the normal kidney. When the kidneys are severely diseased this function is usually seriously interfered with, and it is possible in a very simple way to estimate this phase of the functional disturbance.

For estimation of combined renal function the test can be carried out as follows: The patient is given a limited quantity of fluid to drink in the evening and in the morning the urine is collected. The patient is then given 400 to 500 c. c. of water to drink and the urine collected at the end of one hour and again at the end of the second hour. The specific gravity of the first morning urine is taken, or better, the urea concentration is estimated. Then the specific gravity of the two succeeding specimens is also taken or the urea concentration in each specimen is also determined. The determination of the specific gravity itself really furnishes for practical purposes the information desired. If the kidneys are normal it will be found that the specific gravity of the early morning urine, which is concentrated, will differ considerably from the specific gravity after the ingestion of a large amount of fluid. When the kidneys, however, are diseased it will be found that the variation in the specific gravity between the urine under restricted fluid and the specific gravity after the ingestion of a large amount of water will vary only slightly, and the less the variation in the specific gravity the more severe the renal lesion. It is surprising how frequently information of value can be obtained from the performance of this simple test when carried out under proper realization of its limitations.

The 'phthalein test is almost as simple as the water test, but furnishes a greater amount of information and is more reliable. The technique of the test is simple: one c. c. or 6 mg. of the drug is injected intramuscularly or intravenously, and then the urine is collected for one or two hours, each specimen being collected separately. The amount of 'phthalein which is excreted in that period of time is then estimated by means of a simple colorimeter and the quantity excreted compared with the amount excreted by normal kidneys, which should be from 50 to 60 per cent. for one hour following intramuscular or intravenous injection. In our studies with 'phthalein it was found as a rule that in mild nephritis the excretion of the drug was but slightly decreased. In cases of advanced nephritis the 'phthalein is decreased according to the severity of the lesion.

In cardio-renal cases combined functional and clinical studies are necessary in order to determine relative responsibility of the heart and of the kidneys for the existence of the symptom complex. In the presence of severe clinical symptoms the findings of a good 'phthalein output along with the absence of phenomena point to the heart as the responsible factor. Low 'phthalein output, together with cumulative phenomena, indicate a severe lesion of heart or kidneys, or both, and in any instance a serious prognosis. A low output of 'phthalein persisting after marked improvement in the cardiac condition indicates serious renal disease. The 'phthalein, except in the severest types of congestion, is surprisingly good. In cases in which the output is low with the first indication of cardiac improvement it immediately rises. It has been found that there is an exceptional type of case showing edema, albumin and casts, in which the general function is normal except for salt; indeed a hyper-permeability may exist for other substances, the salt alone being delayed in its excretion.

The test is also found of considerable value in differentiating cases of hypertension in which the renal condition is secondary, from cases of hypertension in which the renal condition is primary.

The third test most used today is the estimation of blood urea. The amount of urea normally in the blood varies between 200 and 500 mg. per liter and rarely rises above this latter figure, even when there is a large intake of protein. In bilateral disease the urea content of the blood rises and the amount of retained urea is roughly proportional to the degree of renal destruction. The blood urea even in advanced renal disease seldom increases to a point beyond two or three grammes to the liter. Marshall has introduced a method for the estimation of blood urea. The method is simple and accurate and can be carried out with very simple laboratory facilities. The estimation of total non-protein nitrogen and creatinin is intricate, requires special facilities and training and does not furnish for practical purposes information of more value than can be obtained from a measure of the blood urea alone.

Time will not allow a discussion in detail of the indications for and limitations of the various tests. It is our plan of procedure first to perform a 'phthalein test, and if the excretion is normal or nearly normal no other functional studies are usually necessary. If, however, the 'phthalein output is low, a blood-urea estimation is usually made, because a low 'phthalein with normal blood-urea has a more favorable prognosis than a low 'phthalein with markedly increased blood-urea. It will usually be found, however, that the two tests parallel each other, a low 'phthalein being accompanied by a high blood urea and *vice versa*.

Functional tests have now proven that they can furnish information valuable to the internist as well as to the surgeon, and not infrequently furnish the only information obtainable regarding diagnosis and prognosis. They give to the surgeon a knowledge which is essential when grave procedures are to be carried out upon the kidney or other portions of the urinary tract.

Functional studies when used in conjunction with careful clinical studies with a proper appreciation of their limitations and an intelligent realization of the kind of information they can furnish will be found of great value to the physician and surgeon. They will not only render more accurate the prognosis and diagnosis, but will enable one to select a more intelligent line of treatment.

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INFANT STOOLS AS DIAGNOSTIC AIDS TO THE GENERAL PRACTITIONER*

By Wm. Weston, M. D.,
Columbia, S. C.

In the treatment of disorders and diseases of the infant's digestive tract it is just as important to ascertain evidences of abnormality as it is to know the condition of the urine in treating a disease of the kidneys. I may in all candor say that it is

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impossible rationally and successfully to practice infant feeding or treat diseases of the intestines in infants without a working knowledge of the simpler methods of examining the stools. The findings from a thorough examination of the stools, taken in conjunction with the clinical symptoms, will often, and I might say generally, lead us along the right path in one of the most difficult problems of practice.

In order that a comprehensive knowledge be gained of this subject it is necessary that we possess a knowledge of the important differences between the principal elements of milk, *i. e.*, fat, sugar and protein, as they exist in human and cow's milk. The fat percentage is about the same in both, but in cow's milk the emulsion is not nearly so perfect, the fat globules are much larger and there are from four to six times as many volatile fatty acids as in human milk. The differences in the proteins of the two milks are both interesting and important. Cow's milk contains about two and a half times as much protein as does woman's milk, and about six times as much casein. Human proteins contain about twice as much nuclein, and much more phosphorus and lecithin. It is thought that all the phosphorus in human milk is in organic combination with casein, nuclein and lecithin, while it is known that not more than half of the phosphorus existing in cow's milk is in such combination. Certainly, whether these differences account for it or not, it is a well established fact that human casein when brought into contact with serum or acids coagulates into fine flakes and is very much more digestible than is the casein of cow's milk.

In regard to the salts, there is still much investigation being made and there remains probably much to learn. But already we know of certain important differences which effect the digestibility of the other elements in cow's milk. A few of these differences are: There is twice as much sodium chlorid in human milk as in cow's milk; there is also present in cow's milk lime in combination with casein; and cow's milk contains much more calcium salts than is found in human milk. This is of special importance, since it may account for the loose watery stools sometimes seen where limewater is used. By withholding the use of limewater and adding sodium chlorid this condition may be corrected.

THE STOOLS OF BREAST-FED INFANTS

During the first few weeks of life an infant has from three to five loose golden yellow stools daily. Gradually after this time the stools become fewer in number and of a salve-like consistency, so that at about the third month they are reduced to two or three daily. The color is due to bilirubin. The reaction is acid, due to the relative excess of fat over protein in the milk. Sometimes it may be observed that the stools are brown in color. When this is the case the milk is relatively high in proteins. The presence of small curds and a small amount of mucus in breast-fed infants' stools does not usually interfere with an infant's gain in weight and comfort, and does not constitute *per se* a sufficient reason for changing the food.

THE STOOLS OF INFANTS FED ON COW'S MILK

The appearance, reaction, frequency and odor will depend upon the relative percentage of the fats, sugars and proteins to each other, the kind of protein, the kind of sugar used, whether or not starch is used, and upon the bacterial activity.

COLOR OF THE STOOLS

Green.—This is the most usual abnormal color seen, and is generally due to either excessive acidity or alkalinity's changing the bilirubin to biliverdin, or to the bacillus pyocyaneus. A stool changing from yellow to green has no significance. A very dark green stool is significant of disease. When the color is due to bacterial action the addition of nitric acid decolorizes it. If due to biliverdin, the addition of nitric acid produces a prismatic play of colors.

Gray.—The next most common abnormal color is gray. When the stools are gray at birth, or become so shortly after birth, the cause is usually a congenital obliteration of the bile ducts, or an atresia or obstruction in the intestines. When associated with mucus the trouble is usually in the duodenum. The most usual cause for the gray color is fat in some form, probably soap and the absence of bile. It must be remembered, however, that this color is not inconsistent with the presence of bile, since the bile may be present in the form of the colorless leucohydro-bilirubin. The presence of bile may be detected as

follows: A small amount of feces is stirred up in water and a few c. c. of the resultant mixture treated with an equal amount of a saturated aqueous solution of bichlorid of mercury. A green color denotes the presence of bile pigment.

White.—Stools that are white are due to the presence of undigested fat in the form of soaps.

Black.—When the stools are black the color is due either to blood or to some drug, probably bismuth.

Blue.—Sometimes a stool is seen that is grayish blue in color and is of no particular significance, being due to some change in the bile pigments.

Pink.—Occasionally around the edge of the stool is observed a pink stain. This often occasions some anxiety on the part of the mother. This is caused by some change in the bile pigment and is of no significance.

ODOR OF THE STOOLS

The odor of the stools of fat indigestion has a strong scent of butyric or lactic acid.

Protein indigestion produces an odor of putrefaction. Indigestion caused by carbohydrates gives the odor of lactic, acetic or succinic acids.

REACTION

When there is an excess of fat the reaction is acid, and when there is a relative excess of proteins the reaction is alkaline. When the carbohydrates are in excess or when there is fermentation of the carbohydrates from bacterial activity the stools become acid. Frothey stools are the result of either carbohydrate fermentation or the result of decomposition of protein, and in either case are acid in reaction. Stools that irritate the buttocks are invariably acid in reaction.

The reaction of the stools is best tested by placing wet red or blue litmus paper on the fresh surface of the stool. When starch is added the color becomes more distinctly brown, the reaction usually acid, and is of an aromatic odor. If the starch is derived from oats the stools may become loose, while if from barley the tendency is toward constipation. The specks so often seen in the stools of infants taking either oatmeal or barley starch are husks, and must not be confused with grains of sand, as is so often done.

When animal broth is added to the infant's food the stool is brown in color, the odor fecal and the reaction alkaline. When an animal food is given as a meal to an infant, and the following meal is a milk mixture, it is not unusual for the stool to present two distinct colors, definitely separated.

The most usual abnormal constituents are curds. These may be composed principally of fats or of casein. The casein curds are usually much larger than the fat curds, are firm and tough, and cannot be broken up by pressure. They sink when placed in water, are insoluble in ether, and when placed in ether become as hard as a stone. The fat curds are usually small, varying in size from mere specks to a small pea. They may be either white, yellow or green. They are soft and are easily broken up when pressure is applied. When placed in water they tend to remain in suspension. After acidification and heating they are soluble in ether, and are unaffected by formalin. Sometimes when the stool appears greasy, a portion can be pressed against paper and when dried if the appearance is due to fat the paper remains as if oiled.

When mucus is mixed with the stool its origin is usually the small intestine; when in combination with a gray colored stool its origin is the duodenum; when on the outside of the stool from the rectum. Stools composed of blood and mucus indicate either a disease of the colon or intussusception. Undigested starch may be mistaken for mucus. By the addition of iodin the starch may be distinguished from mucus, as iodin when in contact with starch stains blue and does not affect mucus.

Blood on the outside of a firm stool indicates a fissure of the anus. Hemorrhage from the bowel in the first few days of life is usually a symptom of hemorrhagic disease of the newborn; when appearing later, of intestinal polyp.

Pus is seen usually toward the end of an attack of a severe inflammation of the large intestine.

The macroscopic examinations of the stools are usually sufficient in the great majority of cases. The microscopic examination is necessary in order to detect ova of intestinal parasites and the amount of undigested starch and fat. For the purpose

of examining for intestinal parasites it is only necessary to dilute the stool with a few drops of water and spread it out on a slide. For examination for starch, a small portion of the stool is stained with Lugol's solution. The starch granules stain violet or blue. For fat, stain a portion of the stool with a saturated alcoholic solution of Sudan iii. The neutral fat drops and fatty acid crystals stain red. Soap crystals do not stain with Sudan iii. After getting the above picture thoroughly fixed in your mind, allow a drop of glacial acetic acid to run under the cover glass, place over a flame until it merely simmers. This procedure converts the soap into neutral fats and fatty acids which appear as large red-stained drops. These crystalize upon cooling. Any increase in the amount of fat after the above procedure indicates the presence of a corresponding amount of soaps.

For the detection of the gas bacillus, which is of the utmost importance in determining the course of treatment in infectious diarrhea, the following procedure is recommended by Morse as simple and easily done: A small portion of the stool is added to a test tube of milk. The infected tube is then placed in a water bath and allowed to boil for three minutes. The tube is then placed in an incubator at body temperature and kept there from 18 to 24 hours. The object in keeping the tube in the boiling water bath for three minutes is to destroy the spore-bearing organisms. When the gas bacillus is present the casein is largely dissolved; the residual casein is somewhat pinkish in color and filled with small holes; and the odor is much like that of rancid butter, as the result of the formation of butyric acid by the gas bacillus. Gram stained preparations made from milk show rather thick, short gram-positive bacilli, with slightly rounded ends.

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DISCUSSION

Dr. J. D. Love, Jacksonville, Fla.—If I had a single criticism to make, it would be in connection with the title. Infant stools have the same diagnostic significance to the general practitioner as to the pediatrician, and that physician, whether he be a general practitioner or a specialist, who fails to take advantage of the limited knowledge he has concerning infant stools is rather minimizing his duty to his patient. I say limited knowledge advisedly, because we are yet far from having such information concerning infant stools as we hope to have in the near future. And since a knowledge of infant stools is conceded to be of such vital importance in the management of diseases of children, and since throughout the South, in all probability, fully ninety per cent. of the children are treated either wholly or in part by the general practitioner, he should be as familiar with, and as skillful in, the interpretation of symptoms as the so-called pediatrician. I would insist, as pointed out by Dr. Weston, that what is of great significance in the stools of the bottle-fed baby is of comparatively little significance in the stools of the breast-fed child, and especially do I call attention to the presence of greenish stools mixed with mucus as having comparatively little significance in the breast-fed child, whereas the same condition might be of vital moment with the bottle-fed baby and should call for a very radical change in our formula. What is sometimes mistaken for a stool composed of protein element is merely a starvation stool, which is brownish, has a musty odor, contains a certain amount of mucus closely resembling the stool of protein material, and we must recognize the fact that a considerable stool might be passed and still the child might be receiving practically nothing by the mouth, because it is acknowledged by competent authorities that from 11 to 41 per cent. of the bulk of the stools consists of bacteria alone. The presence of white particles in the stool, white milk curds, if the child be breast-fed, is of comparative significance, since 20 to 30 per cent. of the stools of breast-fed children consist of fat, which is a provision of nature for a certain amount of consistency of the stool. The presence of neutral fat in the stool means that there is some abnormality in digestion. The presence of fatty acids or of soups is not only an abnormality of digestion, but also an abnormality of assimilation.

Dr. L. Smith, Spartanburg, S. C.—There are three things that we rely upon in making our diagnosis and in feeding infants, that is, the weight of the child, the proper interpretation of the stools, and, as Dr. Faison brought out, our observation of the child itself in feeding it. To be able to interpret the stool, we have to get a clear history of what that child has had previous to our seeing it. For instance, castor oil is always followed by mucus. If you find mucus in the stool it does not mean anything very often, if we know that the child has had castor oil. In the case of a green stool we are told that sometimes we make dilutions and put in milk of magnesia, but a green stool following milk of magnesia does not mean anything.

Another important thing in regard to the stools is the point of time we see the stool and the time

of passing. For instance, the stool after it first passes may not be green; ten minutes afterward it may turn green. If the child has bicarbonate of soda, one or two grains given three times a day, it will have a green stool half an hour after it has been obtained.

The character of the food that the child has is very important in being able to interpret the kind of stool that you would have. I would mention in this connection the foods that I see so often coming to me. I am glad to say they are not coming to me or being given children as they used to be. The peptonoid and egg albumin stools are characteristic. We all know they have characteristics in color and odor that are unmistakable. We find blood in the stools very often. One of the pediatricians in Chicago (Dr. Abt) says that calomel in small doses will give you blood in every case. He tried it and found that calomel produces blood in the stool, and if your child has had blood in the stool after calomel you may find that out. We can correct the trouble by watching the stools and keeping proper tab on them.

Dr. W. A. Mulherin, Augusta, Ga.—There is one point about which I wish to speak, namely, the diagnostic value of culturing stools. We all know that recently Dr. John Lovett Morse and his co-workers in the pediatrics department of Harvard have done excellent work along this line. The result of their work as expressed by them is that infectious diarrhea, or ileocolitis, which is synonymous, is caused by a great variety of germs. This great variety of germs they divide into two main classes: one the gas-forming organisms, and the other non-gas-forming organisms. According to which class of organisms is found present, the diet of the baby, carbohydrates or proteins, is given.

If the test of stools,as outlined by Dr. Weston, shows the gas bacillus or its allied organisms to be present, then protein diet, as lactic acid milk, protein, milk, or buttermilk, is given the baby. It is claimed that this diet not only nourishes the little patient, but the protein has an inhibitory action on the gas bacillus, and therefore acts in a medicinal way. Carbohydrate diet intensifies the action of the gas bacillus and its group and therefore would be contraindicated. Just the reverse prevails if the diet shows no gas bacilli; carbohydrate diet should be given and protein diet avoided.

There is a division of opinion in pediatric circles regarding the value of culturing stools and its resulting good effect in treatment. Personally, I have been following it in my private practice and also at the Children's Hospital in our city, and I think well of it. It appears to me that I have had fewer deaths and much better results all along the line.

There is another test we use in conjunction with the one Dr. Weston has mentioned, and we have used it constantly. It is the one as advised by Drs. Hibben and Sylvester in the *Archives of Pediatrics*. This test consists in having all the paraphernalia sterilized and filling the fermentation tube with nitric acid prior to the test, for the purpose of being sure to kill all gas-forming organisms in the fermentation test tube. Then put 1 c. c. of stool and 1 c. c. of dextri-maltose in a test tube of water. Boil vigorously for three minutes in order to kill all non-gas-forming organisms. Pour into the fermentation test tube, tilting it so that the long arm may be well filled and no bubbles of air remain. Stopper with flaming cotton and place in incubator at body temperature for twenty-four hours. If the gas bacillus or its allied group be present, unmistakable evidence of gas will show in the long arm of the fermentation test tube as the result of the action of the gas bacillus upon the dextro-maltose.

Dr. W. W. Harper, Selma, Ala.—I want to draw attention to one point, and that is the cultural test for the gas bacillus. Last summer a year ago we were finding the gas bacillus in every stool that we cultured and we were up in the air. As the doctor has brought out, you must wash and boil your test tubes, and they must be filled up with nitric acid to kill the gas bacillus. When we did this we got rid of the gas bacillus, but still we began to have trouble. We did not know what was the matter. Finally, we found in Alabama that we had the hay bacillus, which is a gas-forming organism, and that it gave the same reaction with milk that the gas bacillus does, and the only way to overcome that was to autoclave the milk for half an hour to get rid of the hay bacillus.

Dr. Weston (closing).—I wish to say that there was an oversight in my paper in one respect, which was the selection of the specimen of stool to be examined. Be sure not to select it from the outer surface, but from the inside of the stool, in order that you may not be deceived by what you find.

THE TREATMENT OF SYPHILIS WITH ARSENICAL PREPARATIONS*

By E. H. Martin, M. D.,
Hot Springs, Ark.

Metallic arsenic, unlike metallic mercury, has never been used successfully in the treatment of syphilis, and this paper is on the treatment of syphilis with arsenical preparations and not on the treatment of syphilis with arsenic. This is a very important point to remember, as the usefulness of an arsenical preparation in the treatment of syphilis is in approximately exact ratio to its chemical stability.

Mr. Donovan, in 1839, devised a solution still bearing his name, of arsenic, iodin and mercury, which was found very useful in

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the treatment of syphilis, but which fell short because the arsenic compound was not stable and the dosage could not be pushed beyond a certain point without causing symptoms of metallic arsenic poisoning.

Cacodylate of sodium was later used and, while containing a large percentage of arsenic held in more stable combination, there was still an uncertain amount of decomposition, as was shown by the garlicy odor of the patient's breath, traditionally ascribed to metallic arsenic.

Atoxyl came into use in the treatment of syphilis about ten years ago. It had been used with some success in the treatment of sleeping sickness, and that success suggested its use in the treatment of other protozoal diseases.

Atoxyl and several similar preparations of the arylarsonate group gave far better clinical results than we had been getting from mercury. Containing 22 to 27 per cent. of arsenic, an ordinary dose of atoxyl or soamin or orsudan conveyed to the patient enough of the metal to produce death if the preparation had been unstable.

It seemed wonderful to give a patient ten grains of sodium arsanilate, containing the equivalent of two or three grains of arsenious acid, and yet to see no symptoms of arsenical poisoning.

Even when toxic symptoms were produced by this group they were not the toxic symptoms of arsenic, but of the compound. There was no diarrhea or nausea from arsenic, but epigastric pain temporarily from a large dose and amblyopia from cumulative effect.

This was in the pre-salvarsan days, and there was much satisfaction in noting the rapid clinical improvement in some case which had resisted mercury, but yielded quickly to the arylarsonates. And there was greater disappointment when the patient would come in some bright sunny day and speak of its being foggy outdoors. That meant the abandonment of that treatment in that particular case; and after a few such experiences meant a reduction in the dosage in all cases, which interfered seriously with the brilliant clinical results.

So when Ehrlich, in 1910, gave to the world salvarsan it was generally expected, even by that great man himself, that salvarsan would also have to be used guardedly in cases involving the eyes. But we have found that this is not true.

In fact we have learned that the toxic effects of the salvarsan group of compounds belong to that group and are not the toxic effects of the atoxyl group just as toxic effects of the latter are not the toxic effects of arsenic. There is nothing strange or new in this, though many physicians do not seem to grasp the fact. We have always been able to give one hundred times more of the mild chlorid of mercury than we could of the bichlorid without fearing for the patient's welfare, also usually without stopping to consider why.

Every fluid in the human body contains about 0.8 per cent. of the chlorid of sodium, enough of the metal sodium if free to burn one up and enough of chlorin if freed to kill the bystanders. But this does not disturb us or keep us from using sufficient salt in our food daily to contain a lethal dose of pure sodium or pure chlorin. We know that it will be absorbed as chlorid of sodium, circulate as chlorid of sodium and be eliminated as chlorid of sodium.

The same principle applies to the use of the more stable arsenical compounds, and this paper is on the use of arsenical compounds in syphilis and not on the use of arsenic.

I have dwelt on this simple and obvious fact for the reason that many physicians still speak with apparent horror of "putting so much arsenic into a patient's circulating blood;" and such expressions give rise to a public opinion which results in the incomplete and insufficient treatment of thousands of curable cases of syphilis, a public health matter of great importance, for such incompletely treated cases frequently again become active and the spread of the disease continues.

Salvarsan has been found to be so much more efficient as a spirocheticide than any other arsenical preparation introduced either before or since its use became general, that it should have the field entirely to itself in the treatment of all cases in which it can be used.

Neosalvarsan was given a fair trial with every one in its favor, but it is not so efficient as salvarsan. During the winter of 1912-1913, after having previously given sixteen hundred doses of salvarsan to cases which were methodically card indexed, I

changed to neosalvarsan and gave six hundred doses of the latter, using it in all cases.

The card index showed that I had given each patient, on an average, about 40 per cent. more doses of neosalvarsan than I had previously had to give of salvarsan to accomplish the same results.

I naturally changed back to the exclusive use of salvarsan except in cases in which the administration of the concentrated solution of neosalvarsan is more feasible.

There is a small percentage of patients who, after a number of doses of salvarsan, have symptoms of angio-neurotic edema during the administration of the next dose given in a 240 c. c. dilution, and also a smaller percentage who develop intense pain in the back. I tried a more concentrated solution of salvarsan and had ten times as many cases of flushing of the face and eyes and dyspnea and also more frequent instances of pain in the back. So I returned to the former dilution of 40 c. c. to the decigram, and the occurrence of angio-neurotic disturbance became as before, only occasional. Therefore, I continue to use the weak solution.

When a patient has once had these disturbances, which practically never occur during the administration of the first two or three doses, it may be counted on with some certainty that each future administration will be interrupted by the same alarming symptoms unless some time has elapsed after the last previous dose. In such a case the treatment need not be interrupted, for neosalvarsan in concentrated solution, 1 c. c. of distilled water to the decigram, may be given intravenously so quickly that the angio-neurotic symptoms do not have time to develop. These symptoms usually occur only during the administration.

In such a case changing from "606" to "914" only means that more doses will be necessary. Neosalvarsan in concentrated solution is also to be preferred when treating young children and infants who have to be forcibly held during the intravenous administration.

In all ordinary cases old salvarsan is the only drug which should be used. It will cure all cases of syphilis which are curable and gives the best results in the treatment of such cases as are not curable.

I use the word "curable" with intent because I know that a large majority of all cases of syphilis are curable. In arriving at this knowledge, for to me it is too certain to be called an opinion, I depend not solely upon the clinical results of treatment and years of negative serum tests following salvarsan cures, for such circumstances frequently follow mercurial treatment or no treatment.

But the proof is in the considerable percentage of reinfections following salvarsan cures. Of the millions of cases of syphilis thoroughly treated with mercury, medical literature records no reinfections following promptly. Reinfections following mercurial treatment are on record; I have seen two such cases, but none of these was prompt. They occurred years after the treatment and apparently in cases of accidental or spontaneous cures.

For this reason the profession seems correct in its opinion that mercury never directly kills all of the treponemata in any case of syphilis.

On the other hand, many instances of reinfection have been reported after sufficient salvarsan treatment. I have seen more than twenty in whom the evidence of reinfection was presumptive and thirteen cases in which reinfection was not to be doubted, also two cases in which a third infection with true Hunterian chancre occurred. (Another case of reinfection with early rash has come to me since the above was written.)

It is childish to claim, as some writers do, that these must be recrudesences and not reinfections. Some of these cases were proven serologically before and after the second infection. In most of them the clinical picture and history were accepted. In none of my cases of reinfection had a spinal fluid Wassermann been made before the reinfection, but no one ever heard of a patient with spinal syphilis having a true Hunterian chancre, with spirochetes present, as a form of recrudesence.

If a patient, after sufficient salvarsan treatment to abolish the endotoxin reaction and render the Wassermann negative, returns in a few months, or even a year or two, with a history of suspicious intercourse, followed in three or four weeks by a typical hard chancre, he has had a reinfection.

If early secondaries occur after the reinfection, the proof is conclusive. Such reinfection means one thing, and that is that that patient had been cured, and that proves the curability of syphilis.

That such reinfection occurs only after the thorough use of salvarsan, meaning also neosalvarsan, proves that salvarsan and salvarsan only will in some cases cure syphilis, which means that it will not only kill the active mature treponemata, which everyone admits, but that its use in proper dosage and at proper intervals will kill all of the syphilitic organisms in reach of the circulating blood.

No other drug will do this; the lack of reinfections after the most intensive treatment with mercury alone proves this statement.

For this reason, I have afflicted no patient with mercury during the past five years except at his own request or at the request of his home physician. It is in my opinion not only unnecessary to use mercury in the treatment of syphilis, but in most cases unforgivable. Why use a drug which never cured to aid a drug which cures alone?

But every instrument must be properly used to be efficient. When I read reports of cases treated with small doses of salvarsan at long intervals, with or without the intensive use of mercury between doses, and then read the conclusions of such writers that syphilis is of doubtful curability, I quite agree with the writers that the treatment, as they give it, will not cure syphilis.

A sufficient dose of salvarsan must be given each time, at least one decigram to each twenty or twenty-five pounds of body weight of the patient, allowing an estimated discount for clothing and in obese cases for excess fat.

One must remember that one is not dosing the patient, but is trying to poison the treponemata. To do this the circulating blood must be made into a solution of salvarsan of sufficient strength to be effective. So the dose must be estimated according to the patient's net weight, as the volume of blood is proportionate. The largest dose I have ever given was twelve decigrams to a 260-pound man.

We must also remember that every microscopic organism probably exists in some early stage of development in a more resistant or "unkillable" form than when mature. That boiling will kill spore-forming germs but not the spores is an instance of this.

So when we give a full dose of salvarsan for weight we should expect to kill only the mature and accessible treponemata. The next dose should be given well within the accepted period of incubation. Seven-day intervals work satisfactorily. The maturing organisms are then found old enough to kill, but too young to multiply and leave unkillable young. This is theoretical only, but the plan works.

The question often arises as to how many doses are necessary to cure a case of syphilis. The only answer is "Enough." There can be no rule.

A primary case may show a softening of the chancre site after the first dose of salvarsan and a dose or two more may eradicate the disease. Usually, however, the first dose of salvarsan given in a primary case merely causes the ulceration of the chancre to heal and leaves an induration which must contain billions of syphilitic organisms. If this indurated lump can be excised a few more doses will effect a cure, otherwise we have one of the most resistant lesions occurring.

We must remember that the chancre is a mother colony on a foreign shore. It seems to be expecting trouble and has walls and soldiers in armor. At least it must contain many organisms in an unkillable stage of development. I have given some primary cases more than eight doses of salvarsan, the patients not being able to wait developments or to afford to miss a cure and the induration not being in a readily excisable position.

If a patient with an indurated lump at the site of a primary sore is at home the wiser plan would be to stop treatment after the first dose of salvarsan, or to give a dose only every three or four weeks, in order to anticipate secondaries, when after the induration has disappeared one or two more doses will effect a cure.

During the secondary stage of syphilis, meaning after the primary colony has disappeared and before tertiary colonies have formed, syphilis is most easily eradicated.

At that stage two doses of salvarsan will frequently entirely sterilize the host of

treponemata. But usually it is safer to give three or four doses.

When persistence of the endotoxin reaction after each dose occurs one may consider the case an early tertiary, *i. e.*, with colonies.

The secondary stage of syphilis has been given a time limit by some writers, but that is only formal. Practically, as far as treatment is concerned, the secondary stage means only that time elapsing after the primary colony has disappeared and before other colonies have formed, all of the specific organisms being in the circulating blood.

At times these other new colonies are formed before the induration of the chancre site has softened, and in such cases there is no secondary stage alone. I have seen typical tertiary lesions with the chancre still unhealed. I do not mean to include the rash or macules as tertiary colonies, as these are due to liberated endotoxines and are not true colonizations. Even mucous patches and more extensive ulcerations of the throat, from which the treponemata may be demonstrated, may be considered as secondaries, as they are not true colonies, but come from attacks of skirmishers. But occasionally one finds, for instance, an invasion of the bones of the nose or a rupia, meaning real colonization, before the chancre site has softened.

After tertiary colonization the number of doses required to cure, as well as the cure, is problematical and depends entirely upon individual circumstances. When the colony can be reached by the circulating blood a cure is possible and more or less promptly so. In most cases of visceral or bone tertiaries a cure may be expected from five to ten doses of salvarsan if given at seven-day intervals. The first doses kill all of the accessible organisms and also break up the colonies. Persistent treatment will result in a complete cure.

One must not expect more prompt results in case of a hidden colony than that obtained in case of the practically visible colony of the chancre, and we have already noted its resistance to treatment.

If the case comes to us after the formation of a gumma more patience is required. This is easily understood if the gumma is under the skin. Then we can see it and readily realize that each dose of salvarsan only kills the mature treponemata in the gumma. We have patience and wait for its absorption, giving a dose or two of salvarsan at monthly intervals or in groups of doses, with several months between. If the gumma is in the liver or in the meninges we must have the same patience, for the same months of time are necessary for its absorption. In one case of cerebral gumma it took two years.

Recently a young man in the glow of health came to me for his sixteenth dose of salvarsan. He came from his home, two hundred miles away and with changes of trains, alone. Two weeks before he had been accompanied by a nurse. Two weeks before that by a nurse and an attendant. His tenth and twelfth doses had been given to him after a struggle, he having been forcibly held on the table. Before that he knew the straight jacket, and he has had experience in one state hospital for the insane and in a private institution. Today he is normal because of persistent treatment. His cerebral gumma has absorbed enough not to interfere with his normal mentality, but it is still there. I expect to give him at least eight more doses during the next twelve months. But he is curable. Gummata are all curable as regards the syphilitic elements.

Tabes, paresis and tabo-paresis constitute the largest number of cases which cannot be brought entirely to normal. But a large proportion of these can be benefited by persistent treatment. Not all of the symptoms are due to scar tissue. Many of the most disturbing symptoms, especially of tabes, are caused by active inflammatory areas. These symptoms yield to treatment and in most cases the cause of the disease may be arrested by persistent intravenous dosing with salvarsan. The degree of restoration to normal will depend in each such case upon the amount of damage already done.

And in some cases of paresis, with the cerebral cortex as filled with treponemata as a cheese may be with "skippers," little may be expected, owing to the peculiar lack of blood supply to the parts.

This isolation of the pathogenic organism from the blood in both brain and cord brings up the consideration of the intraspinous and intracranial administration of salvarsan or salvarsanized serum.

My experience with the intraspinous methods of treatment has been limited and unsatisfactory, with the intracranial method nil, but a careful survey of the results reported by the enthusiasts on these methods does not show any advantage over the results which I have obtained from persistent intravenous treatment. In fact it is difficult to imagine that more liberal absorption of any drug can take place from the cerebrospinal fluid than from the blood supply of the various meninges.

There are some rare skin conditions which render the disease very difficult to cure. There are cases where years of breaking down and healing and re-ulcerating and re-healing have left scar tissue that is so poorly organized that capillary blood vessels are abnormally and accidentally located in the tissues, so that the specific organisms may exist in such scar tissue out of reach of the blood stream.

I have given one such case more than forty intravenous doses of salvarsan without effecting a cure. This patient still has an endotoxin reaction after each dose and his blood Wassermann is still positive. But clinically the results have been practically perfect. For eight years before he received his first dose of salvarsan his skin was apparently 40 per cent. ulcer in spite of the most intensive treatment with mercury and the iodids. He is now a useful citizen. His kidney elimination is good in spite of the presence for years of albumin in the urine; and I expect to give him many more doses of salvarsan, as nothing else prevents breaking down in the abundant old scar tissue which constitutes so much of his surface.

Such cases, and in fact cerebro-spinal cases, are of only incidental interest to this Section, as they do not affect the public health. In a generation from now they will be practically unknown, as the proper use of salvarsan today will prevent the tabes of tomorrow. Not only will tabes and paresis become medical traditions, but syphilis itself will be finally wiped out by the proper use of salvarsan. This is the result which this Section on Public Health is most interested to see accomplished and for which we should work. We should make it accepted professional knowledge that each new case of syphilis should promptly receive at least enough salvarsan treatment to prevent that individual from spreading the disease. His complete cure is a minor consideration as far as public health is concerned, though that should be accomplished as a safeguard to the future. The spread of the disease is mostly from primary and secondary cases.

Public prostitutes should all be salvarsanized frequently on suspicion, although public prostitutes are not such common conveyors of the disease as clandestine prostitutes, which only shows how important early treatment of the idividual is.

During the past eight years I have treated forty-three physicians with chancres on their fingers. In that limited time I have also seen eighteen chancres of the tonsil and numerous other extra-genital primary sores.

Dr. Wootton, of Hot Springs, reports one case of gastric chancre, which was treated as ordinary gastric ulcer until secondaries appeared. The patient's son had very active lesions in his mouth, and the two were "keeping batch" and rarely washed the dishes. This gastric ulcer disappeared promptly after specific treatment was instituted.

In only one of these extra-genital chancres was a diagnosis of syphilis made before the appearance of secondaries.

It was usually the secondaries which brought them under treatment and, as secondaries are absent in at least 30 per cent. of cases, there is no way of estimating how many unknown latent cases of syphilis exist to go to the tertiary stage without history of syphilis.

These facts emphasize the importance to public health of the use of salvarsan in all cases of persistent local infection anywhere, without waiting for a positive Wassermann, which may often be found only after many chances of infecting others has occurred.

The dangers of the use of salvarsan are insignificant compared with the dangers of having syphilis; and the bad results are less than those from any other drug having specific effects.

Quinine, mercury, the iodids, sulphur and arsenical preparations are practically the only drugs to which have been ascribed specific effects upon infectious organisms (intestinal parasites omitted). We are accustomed to the ill effects of some of

these drugs and to the many personal idiosyncrasies for them. We think of nothing detrimental to the use of quinine because one patient becomes temporarily blind from its use or that many others have urticaria. If those patients cannot take quinine, that is their misfortune, not its fault. They should not have an idiosyncrasy.

For the disastrous results of ptyalism, however, the doctor is usually blamed, not the patient or the drug. But I have seen more kidneys damaged by mercury, especially when given by the needle, than I have seen from salvarsan. If a patient cannot take iodids without developing the usual unpleasant symptoms of iodism, or the more rare and more unpleasant iodid eruption, that is merely too bad that he cannot. No prejudice against the iodids results.

Even when sulphur is used in the treatment of scabies so vigorously that an intense dermatitis results the methods used and not the drug is blamed, but more cases of drug dermatitis will be seen in the treatment of a thousand cases of scabies than follow a thousand doses of salvarsan.

I therefore plead for a sane consideration of the ill results from the use of salvarsan against the hysteria of prejudice, which I am glad to say is subsiding. Doctors as well as children are afraid in the dark, and the simultaneous introduction of a new drug and a new method of administration has for a few years left many doctors in the dark, dreading things unknown.

The fact is that more harm may come from the improper and unskillful use of the new intravenous method of administration than from the new drug. But this condition of affairs is only temporary. Correct and safe technique for intravenous work is becoming very usual, and soon many drugs will be administered by that method as a preference. Omitting the unpleasant disturbance of angio-neurotic edema, which sometimes interrupts the administration of salvarsan and which can be often readily overcome by a few drops of adrenalin subcutaneously and which may be avoided usually by the substitution of neosalvarsan in a quickly administered concentrated dose, we have only three other possible bad results to consider. They are, the salvarsan rash, amounting in a few cases to a dermatitis exfoliativa; acute congestion of the kidneys, quite unusual; and the even more rare occurrence of a small degree of hemolysis, at times enough to cause icterus.

Such troubles are more rare than the ocurrence of idiosyncrasies toward other specifics. In the administration of 6377 intravenous doses of salvarsan to 1776 patients in a given length of time, I had only 32 instances of angio-neurotic edema of sufficient severity to interfere with the administration of the dose; only 42 cases of rash following in from two to seven days thereafter; only six instances of hemolysis, only three of which were of sufficient severity to cause a chill and jaundice; and only four cases of severe kidney congestion. So in giving from two to twelve doses of salvarsan daily, I give it with the same feeling of assurance that one would have in giving any other drug, not expecting trouble and rarely finding it, but always getting good results.

DISCUSSION.

Dr. Frank A. Jones, Memphis, Tenn.—Dr. Martin has had, perhaps, a broader experience in the treatment of syphilis with the arsenical preparations than has any other man south of the Ohio River. Based upon a large clinical experience, he has authority to speak. If you follow his paper closely, as I have tried to do, there is really a trinity of force. He is an absolute iconoclast with reference to potassium iodid and mercury, a hero-worshipper at the feet of salvarsan, and optimistic absolutely with reference to the future of syphilis in its various stages.

Dr. Martin brings out a question we all shall have to ask ourselves, namely, based upon his valuable statistics of over 6,000 administrations of salvarsan in over 1,700 cases, and has obtained the results so vividly given to us, has the day come and is it here when mercury and iodid of potash must be dropped? Personally, I am not ready to convict myself of being unpardonable for giving mercury or giving iodid of potash. We know that potassium iodid will cure some cases of gumma, and I value it as much as I do salvarsan. I am not prepared to say that salvarsan will absolutely cure all types and kinds of gumma. I have seen a great deal of Dr. Martin's work at Hot Springs. I have been there time and again, and have watched him in his clinics. There is no one in this country,—in Chicago, Philadelphia, or anywhere else,—who has a larger clinic of syphilis than has Dr. Martin, but I am not prepared to say that salvarsan will cure absolutely all types and kinds of gumma. You must consider the stage of the gumma, the duration of the gumma, the anatomical location of the gumma, the age of the patient; and a good many other factors

must be taken into consideration in the study of gumma, etc., with reference to their curability with salvarsan.

Since the advent of Ehrlich's work upon the treponema, we are confronted with a new question, and if in the light of Ehrlich's work salvarsan is as near a specific as mercury and iodid of potash, if it is a logical proposition, why should we continue to burden our patients' stomachs and intestines with iodid of potash and mercury, and so forth, when salvarsan can be given intravenously? But there comes the question as to salvarsan of what can be done with it. Of course, many of us may not be so well equipped as Dr. Martin. In the large medical centers or smaller places you can equip yourselves with the necessary instruments and facilities for giving salvarsan, but we have to learn how to use it under proper conditions out in places where we have not all these facilities. We must teach the profession and the men in the interior how to use it.

In the Baptist Hospital, in Memphis, I saw a clinician who attempted to use salvarsan intravenously, and he could not strike the vein to save his life. He made four or five different punctures, lost his head, and called in a man who was qualified, and he did all right.

You must teach us doctors how to give salvarsan. It looks as if we have salvarsan on the one side and potassium iodid and mercury on the other, with salvarsan in the vantage ground.

Dr. Henry Page, Atlanta, Ga.—I think the question of giving up mercury in the treatment of syphilis is too important a one to pass by without further evidence on the subject. While my experience in giving salvarsan is limited, I still have some experience to give that is worthy of consideration.

Just before the present war, in 1913, I visited Professor Ehrlich, and heard this question asked him: "Should salvarsan be given alone, or should iodid of potassium and mercury be given in conjunction therewith?" Professor Ehrlich's answer was: "Salvarsan is not a cure for syphilis." To use his own words, he said: "In fighting a battle, we use heavy artillery to shell the position of the enemy, and in the same way we use salvarsan. (the heavy artillery of syphilitic therapy), to shell the position and rout out the forces in the front. This attack must be followed by the infantry; and doses of mercury in syphilis are analogous to the infantry in a battle attack. He who fails to use both mercury and iodid in the treatment of syphi- [illegible] along with salvarsan will fail to complete the victory." The statement of such an authority [illegible] be wholly ignored.

[illegible] *Williams, Washington, D. C.*—If [illegible] Ehrlich had had the experience at the [illegible] at Dr. Martin has shown he him- [illegible] had, he might not have uttered the [illegible] rly made. How can we recon- [illegible] s between these two men? In [illegible] ist remember that pharma- [illegible] cals [illegible] thological facts are often [illegible] com- [illegible] forever this subje[illegible] discussed [illegible] really speaking, our fore- bears k[illegible] that potassium iodid and mercurial preprations had the property of accelerating metabolism and removing exudate more rapidly within the organism. The pathological fact is that the syphilitic lesion tends to spontaneous cure and disappearance. But as the force of the organism is overcome, there is some period when it destroys tissue, in which a cicatrix is formed. Salvarsan then will not cure the patient's scars, but it will cure his syphilis; that is, if a lesion has occurred in some important area of the body, such as the nervous system, the destruction of an important nerve, practically giving rise to disability, the disability will not be removed, but the syphilis may be cured. If the patient is not already dying from cachexia, he can be rehabilitated.

As to whether or not he is made susceptible to reinfection only after he is completely cured, I am not prepared to say. Dr. Martin may be able to speak concerning that because of his long experience with syphilis.

I have been giving salvarsan to neurological cases since 1910, and the degree of improvement noticeable in patients is unbelievable to those who have not seen it in tabes and cerebrospinal syphilis. But to cure the syphilis itself is a different thing. So, I do not use the word cure, for the reason that I am not able to carry out the treatment so thoroughly as Dr. Martin does. Patients will not submit to such prolonged treatments. But nevertheless they remain comfortable and comparatively well, and the symptoms may disappear for a year or two. However, I cannot say the syphilis is cured. The patient is relieved, and does not have a fresh lesion during the period when we have him under treatment.

Dr. Charles L. Minor, Asheville, N. C.—I have had occasion to see the results of treatment of tertiary syphilis with iodid of potassium, and I think it would be a great pity to have the information go out from this Association that iodid of potassium is of very little value. Since I cannot speak with authority myself, I am glad to quote a distinguished authority in this connection.

Dr. Fordyce, of New York, in his address before the Congress of American Physicians and Surgeons, which was published the other day in the *American Journal of the Medical Sciences*, gives us a more cautious view. He has used salvarsan as freely as Dr. Martin. He admits its wonderful power, as Dr. Martin does; but he has not seen fit to turn his back upon iodid of potassium. He himself admits the value of iodid of potassium in removing deposits which salvarson does not touch. Salvarsan is a parasiticide. Iodid of potassium is not that. Iodid of potassium removes the deposits in the tertiary stage, and in that way is valuable.

Dr. Martin reports a case of chancre of the stomach. I would like to ask him how the diagnosis was made? Was it made with the gastroscope? I would like to have him prove to me how by looking at a lesion of the stomach with the gastroscope he can tell it was a chancre. If patients get chancre of the stomach, we want to know something about it. I think we ought to make an exploratory section and open the stomach and look at it. Nowadays surgeons do anything. If such an exploration were made, we

would be sure whether or not there was a chancre of the stomach. I think Dr. Martin is prone to be a little premature in stating positively this was a case of chancre of the stomach. Before syphilis of the stomach is cured by salvarsan we ought to have definite proof that the lesion was syphilitic or a chancre. Of course, therapeutic tests are valuable, but I should like to know how chancre of the stomach was diagnosed in this case.

Dr. William Krauss, Memphis, Tenn.—The interest of this Section hinges upon its bearing upon preventive medicine. From this point of view, the question of the differential value between salvarsan and mercury is too apparent for any doubt in the matter. We have a very active spirocheticide in salvarsan, and the proper thing to prevent the spread of the disease is, as Dr. Page has brought out, to sterilize the patient as rapidly as possible with respect to his infection, employing such other treatment as is necessary for the comfort of the patient, or the restoration of the patient to his normal condition. The point is this: if salvarsan has the property of rapidly sterilizing a patient to prevent the spread of the disease, to that extent it is a matter of importance to this Section.

Dr. G. Victor Williams, Chattanooga, Tenn.—I hope Dr. Martin's conclusions are correct, but would like to suggest that possibly a few years ago he was equally as enthusiastic over curing all syphilitics with iodid of potassium and mercury as he now is in believing salvarsan a cure-all for these patients.

We have a great many genito-urinary men and syphilologists who up until the last two years were equally as enthusiastic in using salvarsan and neosalvarsan as Dr. Martin is now; and a great many of them have now gone back to using mercury and iodid of potassium along with salvarsan and neosalvarsan, while a few have abandoned salvarsan and returned to their old treatment with mercury and iodid of potash.

In passing I wish to say that it is now believed by physiologists that iodid of potassium is not an alterative in itself, but that the iodin in it stimulates the thyroid gland to secrete thyro-iodin, which is the greatest alterative known and which clears the clogged lymphatic system of spirochetes and allows the free circulation of salvarsan and mercury.

Dr. Martin in his paper mentions cacodylate of soda with the other arsenical preparations seemingly only to condemn it. Salvarsan has the advantage of cacodylate of soda, in that Ehrlich experimented for months with salvarsan, finding the proper dose, and when he placed this instrument upon the market it was of the proper size. I do not claim that cacodylate of soda will give such good results as salvarsan, for we have probably never given it in sufficient doses, as its dose has never been worked out. Some one has claimed that it takes 4½ grains per pound body-weight to kill a dog, while Prokhorow claims ¾ of a grain per pound body-weight to be the proper dose for a human being. Consequently, for a man weighing 140 pounds it would require 105 grains of cacodylate of soda.

Contrary to the opinion of most men, I believe cacodylate of soda is eliminated rapidly, as the garlic odor can be detected on the breath within sixty seconds after an intravenous injection of from seven to twenty-eight grains.

I have letters from two of America's greatest internists who are still using ¾ to 2 grains of cacodylate per dose, fearing, they say, that using more might cause an explosion, liberating a fatal dose of arsenic in the system. I also have letters from other physicians using from 30 to 45 grains intravenously with good results.

Some claim that treating syphilis with cacodylate of soda is like shooting an elephant with a pop-gun. Now the principle of the pop-gun is all right, and when we develop the gun to a 16-inch cannon by proper size dose, I believe we will get results.

Dr. C. C. Bass, New Orleans, La.—I would like to ask the essayist if in his experience there have been any deaths within five days from the time of the administration of the drug?

Dr. M. L. Graves, Galveston, Texas.—I am very glad that Dr. Martin in his optimism has eliminated degenerative lesions of the nervous system in the curability of this disease. If one thinks of the effect of the spirochaeta pallida primarily as an exudative syphilis, in which the tissues have an exudation of round cells and perhaps serum, it would be reasonable to suppose that an agent like salvarsan or neosalvarsan in sufficient quantity would be beneficial or curative, but in the parenchymatous or degenerative forms of the disease, such as we get in tabes or in paresis, or in the trophic forms of the disease, with atrophy and such lesions as Erb's syphilitic paraplegia, when degenerative effects, such as sclerosis of the posterior columns of the cord, or an actual atrophy of the cortex of the brain, with adhesion of the membranes of the brain, such as we get in tabes, in paresis and tabo-paresis, and destruction of the anterior cornual cells, such as we get in the atrophic forms of the disease, and in well developed cases of Erb's syphilitic paraplegia, it is a hopeless proposition to expect any recovery in such cases. Not only is that true, but in some of these cases, for some unexplained reason, the disease is actually made worse by the administration of these remedies.

In the early stages of locomotor ataxia good would result, but we do not get patients early enough, when the diagnosis is made, to obtain the best results of salvarsan treatment. The same is true in paresis. If a patient is under mental excitement his condition is frequently intensified by both intravenous injections of salvarsan and by the intraspinal injection of the same.

In regard to mercury and iodid of potassium, it seems to me we would not be justified in throwing aside mercury after the weight of testimony we have had in the medical profession in regard to it.

So far as iodid of potassium is concerned, there is no definite and conclusive evidence that it produces any effect upon the disease, unless, as mentioned by Dr. Minor, it has some absorptive effect. I have given as large doses of iodid of ptassium as any one. On one occasion I gave a patient from Hot Springs, Ark., 1,749 grains of iodid of potassium a day, more than three ounces. I saw that patient make a happy recovery from his mental disturbance. The iodid was eliminated practically

from every secretion in the body. We recovered iodin from the sputum, from the urine, and from the feces. Of course, much of the iodid undoubtedly passed unchanged through the intestinal tract. But I have attempted to recover iodin in cases of its administration in as much as 60 grain doses, three times a day, from the spinal fluid, and I have found no trace of the iodin after the administration of 180 grains per day. Therefore, I have no reason to believe that iodin in this form accomplishes any results in the deeper forms of parenchymatous syphilis of the nervous system.

Dr. E. H. Martin (closing).—I wrote this paper at the request of the secretary of this Section, who suggested the title, knowing that ordinarily it is not a public health subject. But I thought that I could see reason to insist that everybody who has a venereal sore should be given a dose of salvarsan. I believe that it is the wisest thing to do; to give at least one dose of salvarsan to every case with a local sore, whether it be a chancre or a chancroid, or where you are in doubt. Also to cases with persistent extra-genital local infections of any doubtful sort.

In reply to the question asked by one of the speakers, I do not give mercury in the treatment of syphilis unless the home doctor of a patient requests it. Otherwise I have not given mercury in the treatment of syphilis for five years, and I find that the patients get along much better without it. The proof of the pudding is in the eating, and not in chewing the bag string. The patients who have come back do not return with recrudescences of syphilis, but with new cases of syphilis,—reinfections. I wish to assure Dr. Minor that I am not a genito-urinary specialist. I am a general practitioner, and the syphilitic patients that come to me amount to but 23 % of the total. But that gives me enough material upon which to base opinions.

As to the use of iodids, I have used them more recently than mercury, but have discarded them for the sake of the patient's stomach and because nature takes care that absorption takes place if we kill the causative organism. I have watched gummata disappear just as rapidly without anything at all except weekly doses of salvarsan as under heavy doses of iodid of potassium.

Now to explain that stomach chancre. It was Dr. Woottons case. I am sorry he is not present. This patient came to Dr. Wootton with every evidence of gastric ulcer. After having been treated for two or three weeks in a routine manner, he had an early secondary rash. He had no other evidences of chancre than the gastric ulcer. Being before the days of salvarsan, Dr. Wootton put the p[illegible] upon inunctions of mercury and the stomach ulcer was soon well.

[illegible]-Is that enough to diagnose chancre [illegible]?

[illegible]-Yes. That early secondary rash [illegible] but once, and it occurs within from three [illegible] after a chancre appears, [illegible] on this man had w[illegible]t his [illegible]

[illegible] intravenous work [illegible]ry simp[illegible] drugs are now bei[illegible]en intrave[illegible] years the countr[illegible]tor will be [illegible]alvarsan tet[illegible] miles from his office and give it in the vein with perfect technic.

Dr. Krauss sounded a note which is of the utmost importance to this Section from the standpoint of public health whether you agree with me in the treatment of syphilis or not: Every case of syphilis should be thoroughly sterilized as early as possible by repeated doses of salvarsan.

In answer to Dr. Bass, I have seen no deaths from treatment with salvarsan. I have seen one death from congestion of the kidneys two weeks after a dose of arsenobenzol, whether due to the drug or to idiosyncracy I cannot say.

Dr. Graves is correct in stating that we cannot relieve the scar. If a man has a syphilitic ulcer on the face we can cure the ulcer, but we cannot take the scar away. We cannot relieve all cases of cerebro-spinal syphilis, because there is often too much damage done, and in some cases the treponemata are outside the blood stream.

AUTHORS' ABSTRACTS

Medicine

Primary Cancer of the Liver. Report of Case With Autopsy Findings. H. T. Brooks, Memphis, Tenn., Memphis Medical Monthly, December 1, 1916, p. 272.

A careful review of the literature shows primary liver carcinoma quite rare. Hale White found only eleven cases in 11,500 necropsies.

In the gross there are three types: First, the nodular type, in which various sized nodules occur throughout the liver; secondly, the massive type, in which the entire or a greater part of the lobe is replaced by the tumor mass with often secondary nodules surrounding this; and thirdly, the diffuse type, in which the liver shows numerous very small nodules, each being surrounded by a connecting tissue capsule.

Microscopically two forms exist: first, carcinoma simplex, in which the cells occur in solid masses; and secondly, adeno-carcinoma, in which the cells occur in the form of atypical glands. In both types, however, the cells appear sharply defined and well stained as newly regenerated cells do.

The origin of a primary liver carcinoma is from the liver cells proper, or from the bile duct epithelium. In either case the cells composing the tumor mass resemble, more or less, the form and arrangement of the cells from which they arise.

The parenchyma cells of the liver have considerable regenerative capacity, as experimentally one may remove from one-third to one-half of the liver with the restoration to normal. This great capacity of regeneration is probably responsible for the occasional occurrence of primary carcinoma in the liver, it being, however, necessary for some poison to bring about necrosis, which necrosis starts the process of regeneration.

The majority of primary liver carcinomas, from 75 to 80 per cent., are associated with Laennec's cirrhosis, and give a past history of ingestion of alcohol-containing fluids. It is, therefore, believed that the alcohol is responsible for

the necrosis of the liver cells, and also for the hyperplasia of connective tissue; as result of the necrosis, regeneration of the liver cells occur to restore the organ to normal, and these rapidly-growing liver cells may, and occasionally do, pass beyond this requirement, and continuing to proliferate, become malignant.

The case reported by the author occurred in a colored man, aged 65, with a previous history of prolonged use of alcohol. Clinical examination showed an emaciated anemic man with ascites and enlarged spleen. Necropsy revealed a primary tumor mass in the left lobe with numerous small secondary nodules scattered throughout the right lobe. The surface of the liver showed the typical hob-nailed appearance characteristic of Laennec's cirrhosis of the stage of atrophy.

Microscopically, the nodules were composed of cells resembling bile duct epithelium. The other parts of the liver showed all the characteristics of atrophic cirrhosis, such as, increased fibrous connective tissue, round cell infiltration, etc.

Anatomical diagnosis: Primary adeno-carcinoma of liver associated with Laennec's cirrhosis.

Some Important Diagnostic Points the General Practioner Should Know About the Nose. Gaylord C. Hall, Louisvile, Ky. Kentucky Medical Journal, Vol. XV., No. 2, February 1, 1917, p. 58.

The author discusses obstruction, discharge, hemorrhage, pain, tenderness, and headache.

Under obstruction in infancy, he calls attention to "snuffles," due to syphilis; to stopped up noses in babies with over feeding, over dressing, and insufficient fresh air. It is possible to have adenoids at this time requiring removal. In childhood tonsils and adenoids are the most frequent cause; sometimes diphtheria. Be on the lookout for foreign bodies in one-sided obstruction. In adults obstruction may be due to many causes. To differentiate use the head mirror, nasal speculum, and shrink the parts.

Under discharge he discusses the diagnostic value of the source of the discharge in diseases of the different sinuses.

Under hemorrhage he considers nose bleed as a symptom, a disease, or a remedy. Most hemorrhages occur from the anterior lower septal region and hemorrhage is best controlled by cauterization without packing with energetic treatment of the general condition.

Under pain is discussed the location at the root of the nose, or deep under the skull. It occurs in the morning, due to pressure of pent-up secretions. Drainage relieves it. Internal remedies do not control pain well. Shrinking of the parts and inhalations of steam are efficacious.

Under tenderness he calls attention to pressure points over the frontal, the antrum, and between the eyes for the ethmoids. In determining the involvement of the sinuses, pressure should be made with the ball of the finger equally on each side. The difference is carefully noted.

Headaches have the same general intention as pain.

Concluding, he urges the general practitioner to become familiar with the use of the nasal speculum and head mirror, and more familiar with the anatomy of the nose. By application of this knowledge, he can solve many problems in nasal pathology.

Some Important Diagnostic Points the General Practitioner Should Know About the Ear. Seldon Cohn, Fulton, Ky. Kentucky Medical Journal, Vol. XV, No. 2, February 1, 1917, p. 55.

One of the most important diagnostic points of acute ear affection is pain. The first symptom we have is earache, so common in some families as to be thought one of the necessary ills of childhood. A child subject to earache is in danger of deafness, and no care should be spared not only for its relief, but also in ascertaining and removing the cause. It rarely will be found even after a single attack of pain that the hearing of the afflicted ear is normal. The pain may vary from a dull ache to most intense anguish; often the pain is most severe at night. In children too young to tell the cause of distress, its seat will often be pointed out by unconscious movements of the hand to the affected ear. Frequently in young children after several days of suffering a discharge of pus reveals the diagnosis. So when a child cries from an unknown cause the ear should be investigated.

The pain is not always confined to the ears, but extends to adjacent parts. Frequently the pain extends to the teeth, until the patient scarcely knows whether toothache or earache predominates. The severity of the pain is to some extent a gauge of the violence and character of the inflammation, and the severer form, especially when constant, indicates the probability of suppuration with all its attending dangers.

As in many diseases, the presence of pain is fortunate, for it comes as a warning of impending danger to the hearing, demanding instant relief which shall furnish a safeguard against rapid impairment of a delicate organ. Subjective noises of some kind are rarely absent. Children often mistake these sensations for real objective noises, and inquiry as to their meaning is sometimes the first indication of the existence of disturbances in the ears.

Some Theories and a Few Facts About Headache. G. Werley, El Paso, Tex. Southwestern Medicine, Vol. I, No. 1, January, 1917, p. 29.

The three common types of headaches seen by the general practitioner are the migrainous, the indurative or rheumatic, and headaches of exhaustion. About two-fifths of all chronic headaches are of the migrainous type, and another two-fifths are rheumatic. Some points in the diagnosis of migraine are: A history of heredity; it is unilateral in about two-thirds of the cases; the majority of sufferers are women, and the attacks frequently occur at the menstrual time; it is as common among the poor as the rich; and the pupils are contracted during the attack. A headache that begins late in life is not true migraine; a continuous headache is not migraine. Rheumatic headache begins late in life, is very chronic and the pain is practically continuous. It starts as a rule in the occipital region, but later may spread

to other parts. It yields to heat and massage. A neurotic constitution underlies a large proportion of chronic headaches. Anemia and toxmia are factors of great importance. Focal infection plays a large part. Such focci may be found in the teeth, the tonsils, the nasal sinuses, the gallbladder or appendix.

Headache may be the leading symptom in a long list of ailments, as: apoplexy, tuberculosis, paresis, nephritis, myxedema, malaria and syphilis.

Eye-strain is the cause in a limited number of cases, though it is seldom the sole cause.

It is plain that rational treatment must depend upon finding the cause.

Rectal Feeding. George M. Niles, Atlanta, Ga., Journal of the Tennessee State Medical Association, January, 1917, p. 374.

Administration of food by the rectum dates back to antiquity. Aetius and others mention it; also writers of the middle ages, though their results were unsatisfactory, probably on account of imperfect technic.

Many varieties of food may be utilized in rectal alimentation. Protein may be supplied in the form of predigested meat or egg albumen to which salt has been added. Of the carbohydrates, grape sugar seems the most available, though not more than six ounces of a 10 % solution should be allowed, as it tends to provoke diarrhea. Starch has been used in many forms. Fat also may be used, but not more than one-half ounce in twenty-four hours is advisable.

It is believed that but one-fourth of the nutriment required by the body can be absorbed by the rectum, and the probable limit of rectal feeding is about two weeks. The writer feels sure that under ordinary circumstances the rectum can not be expected or made to absorb more than 300 calories daily. Rectal feeding should be considered only an auxiliary or a means to tide over an emergency,—not as an adequate supply.

The rectum should be cleansed by an enema of normal salt solution once daily,—not before each feeding. If the rectum is inflamed boric acid may be used instead. In the presence of tenesmus a return flow catheter is helpful for the irrigation. Temperature of the cleansing enema may be about 100° F.; the nutrient enema 10° cooler.

Conceptions and Misconceptions in Psychoanalysis. Trigant Burrow, Baltimore, Md. The Journal of the American Medical Association, Vol. LXVIII, No. 5, February 3, 1917, p. 355.

Psychoanalysis labors under very grave misap- It is essentially an educational s concern is exclusively with the moral al. Unlike the more conciliatory popular psycho-therapeutics, psycho- itter one's weaknesses, but

idespread and le misconceptions for which en ignorantly hold that psychoanalysis bases its method upon the theory that nervous disorders are due to the existence in the patient of some species of sexual perversion. Such an assumption is not only false, but the true statement of psychoanalysis lies in a thesis which is precisely the contrary of this.

In his "Drei Abhandlungen zur Sexualtheorie," Freud clearly defines the neurosis as the negation of abnormal sexuality.

An equally prevalent misapprehension is the view that psychoanalysis consists in eliciting from the patient a confession of all that he knows. Again the reverse is the true statement. It is precisely in the eliciting of what he does not know that there consists the entire technique of psychoanalysis. *For the sphere of psychoanalysis lies exclusively in the field of unconscious mentation.* Herein lies the crux of Freud's teaching. It is the task of psychoanalysis to decipher the secret code into which the patient has distorted the inadmissible wishes of his innermost nature, as indicated in the expressions of pain embodied in the symptoms of his disorder, by retracing (chiefly through the dream-material) the *repressed* associations underlying his pathological disguise.

Studies of the Stomach in Syphilis. Franklin W. White, Boston, Mass., The Boston Medical and Surgical Journal, January 4, 1917, p. 11.

In a group of 600 cases of syphilis we found 44 with prominent stomach symptoms after excluding cases with hepatic cirrhosis, gumma of the liver, nephritis and tabes. In 35 cases, no definite lesion of the stomach was proved; in 9, actual syphilitic or coincident lesions were found (ulcer, gumma or cancer). It is often impossible to distinguish between syphilitic and coincident lesions during life.

The changes in gastric secretion were not distinctive. This was normal in 23 cases (65 per cent.); hyperacid in 5 cases(15 per cent.); and subacid in 5 cases (15 per cent.); while 2 cases (5 per cent.) showed no free HCl. Only one case showed 12-hour food residue.

The X-ray was very valuable in giving the shape, size and position of the lesions. The contour was exactly that of chronic peptic ulcer with its complications, or cancer of the scirrhus or medullary type.

Actual syphilis of the stomach is one of the rarest types of syphilis. Syphilis was formerly looked upon as an important cause of chronic gastric ulcer. This is disproved by serum tests. In less than 1-2 of 1 per cent. of 179 private cases of proved peptic ulcer was the Wasserman positive.

There are no characteristic symptoms of syphilis of the stomach. They somemtimes resemble those of chronic catarrh, ulcer, or growth with or without obstruction of the pylorus.

The prognosis is about that of syphilis in general and a good portion are cured, but a small group do badly. Some caution must be used in the prognosis, since in spite of remarkable results in individual cases, less than one-half the cases were free from dyspeptic symptoms.

(Continued on page 229)

TROPICAL DISEASES AND PUBLIC HEALTH

PUBLIC HEALTH ACTIVITIES IN THE SOUTHERN STATES, WITH SUGGESTIONS FOR INCREASED EFFICIENCY*

By W. S. Leathers, M. D.,
Director of Public Health of Mississippi, University, Miss.

The Section on Public Health and Tropical Medicine of the Southern Medical Association was created in 1912. This was made necessary by the fact that there are public health problems of special importance to the Southern states, and therefore it was deemed advisable to form a Section of this Association which would have for its object the study and investigation of problems of preventive medicine, as applied to this territory. During the past four years this Section has wielded a decided influence in awakening public sentiment for right living; and it has also been instrumental in serving as a medium through which health officials could gain expression relative to investigations done and achievements attained in the territory covered by this organization. It is with this idea in view that your Chairman desires to discuss briefly the present status of health activities in the South, and to offer some suggestions with the hope that they may serve for increased efficiency.

The present development of health activities in the South has occurred during the past ten years. The first state board laboratory for diagnostic purposes was created in Georgia, in 1905. Later such laboratories were organized in Maryland, Alabama, North Carolina, South Carolina, Kentucky and Mississippi. The laboratory may be regarded as a corner-stone in public health organization. It serves, as no other agency, to affiliate the medical profession with the state department of health; and it immediately shows the people of the state the practical value of health work. Practically all of the Southern states have such a laboratory, and it is serving a most useful purpose. The scope of the work done in this laboratory varies usually with the appropriation made in each state. However, some of the states are doing an immense amount of efficient work with a relatively small appropriation.

This work includes in all instances the examination of specimens for tuberculosis, typhoid fever, malaria, hookworm, diphtheria, and milk and water. A few of the states are also making antitoxin and vaccines for distribution to the public free of cost. A number of states are giving anti-rabic treatment. One state is making anti-rabic serum for free distribution. The state laboratory should play a part in the prevention of cancer. The prevention of venereal diseases has received scarcely any attention.

The question may be raised as to what should be the exact scope of work of the state board laboratory. There should be as much uniformity as possible in the work of this institution, and with this object in view, a committee was appointed by this Section during the last session of the Southern Medical Association to make a report upon the standardization of the work of state board laboratories. It is needless to emphasize the great necessity of each state's having a well organized and efficient laboratory for diagnostic purposes. Such a laboratory should have as its object the examination of any specimen which will have a direct bearing upon the prevention of disease.

The collection and correct analysis of vital statistics is the scientific basis of all efficient health work. There are only five Southern states at present in the registration area. This recognition may be used as an index of efficiency. There are others whose departments have been well organized and which promise early recognition. At least half of the Southern states are

*Chairman's Address, Section on Public Health, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

making slow progress in the inauguration of this work.

In a number of these states there is, in reality, no bureau of vital statistics. The question may be raised whether the statistical data collected by these states is being used in the most effective way. Are these bureaus being vitalized? Do the people appreciate the practical value of the collection of birth, death and morbidity statistics? The data which is being collected should be used in such a way before the people of the state as to impress them with the necessity of such work and the practical bearing which it has upon the solution of all health problems. The people must get this point of view if these bureaus are to be maintained upon an efficient basis. It is not sufficient simply to state that the births should be reported because of certain reasons, and likewise, death should be reported because of certain reasons, and that a knowledge of the diseases of the county or state is invaluable. This must be reinforced by adequate field work, the giving of lectures, distribution of literature, and what is still better, making a demonstration which will illustrate in a clear and unmistakable way the application of vital statistics to the prevention of disease and the prolongation of human life.

Much has been done in some of the Southern states in improving the sanitation of towns and cities. In a few states special attention has been given to this phase of sanitation, and the work has been conducted by the executive officer of the board of health or by a chief sanitary inspector. This is notably true in Mississippi and Louisiana. In these states the towns and cities have been inspected systematically, under the supervision of the state boards of health and upon an intensive basis. The inspections have been of immense value in improving the sanitary condition of hotels, restaurants, grocery stores, meat markets, slaughter houses, [illegible] indeed, all places of public utility. Judging from the experience of these [illegible] would seem that there will be an indefinite delay in securing the proper sanitation of towns and cities in any state, [illegible]s such work is done under the supervision of the state board of health. It is not the idea that such inspectors should usurp local administrative effort or authority, but rather to re-enforce local health organizations.

The protection of water supplies and the disposal of sewage is properly the work of the sanitary engineer. The state boards of health have not as yet placed this phase of health activity upon so efficient a basis as its importance merits. It is true that a number of states, namely, Virginia, Maryland, Louisiana, North Carolina, Kentucky, Alabama and Florida, have appointed sanitary engineers, but the work seems to be greatly handicapped by the inadequate laws for the protection of water supplies and the disposal of sewage. Moreover, in some of these states the sanitary engineer is assigned many other duties, and for this reason but little of his time is devoted to this special work. Each state board of health should be provided with a sanitary engineer, whose time and thought should be given entirely to devising ways and means for securing the best possible conditions for protection of water supplies and for prevention of soil pollution. This official should also pass upon the architecture of jails, alms houses, schools and all buildings of public utility. That is, such plans should be submitted to the sanitary engineer for approval. This would be of untold value in securing proper ventilation, heating and lighting conditions in the schools and other public buildings of a state. The indifference in such matters is responsible for physical defects in thousands of children throughout the South, and the health standard of the masses is being lowered each day because of insanitary conditions, the result of such neglect.

The population of the Southern states is largely rural. In some states more than 80 per cent. of the population live in the country. Therefore, in our effort to create higher ideals for better living conditions and reduce the death rate of a state, the rural people deserve special consideration.

Much has been accomplished in the upbuilding of sanitary conditions in the rural districts of the South. There can be no question that the hookworm campaign, which was conducted during the years of 1910-15, served as a tremendous stimulus and was more largely responsible for the present development of health conditions in the South than any other agency. This campaign impressed the people with the

importance of proper living in their homes and in their communities. It served to re-enforce and strengthen the health department of each state, resulting in a larger vision and more efficient service for the people. This work was conducted upon a systematic basis in each county, and an effort was made to reach all the people by means of lectures, literature, correspondence, demonstration and the actual examination and treatment of individuals for hookworm. The good which was accomplished is incalculable.

While the results in this campaign were definite and tangible, certain limitations were recognized, and there grew out of it what seems to be the next logical step in public health activity, the "intensive method of health work." This naturally took the form of intensive health work in a community or number of communities, and today the intensive method is being used in several Southern states in co-operation with the International Health Board and the State Boards of Health.

In doing this work a community is selected on an average of from 100 to 300 homes. A survey is made in the community for the purpose of finding out the character of the water supply, whether the houses are screened, those infected with hookworm and other intestinal parasites, and also in general the health index of each home. This is followed by the treatment of those found infected and the construction of sanitary privies. In addition, a general educational campaign is also conducted in preventive medicine, which is of inestimable value in arousing the sense of responsibility of the public in proper sanitary measures. To illustrate by a concrete result the value of this work to the people of a community, Picayune sanitary district, Pearl River County, Mississippi, has in it three hundred and twenty-three families with a population of thirteen hundred and eighty-two. It is a community with perhaps less than average standards. The work of the community began May 15 and ended September 15, a period of four months. During this time every family in the community constructed an improved type of privy and many homes were screened. In this community there is a small village of 219 homes, all of which are provided with first-class privies, with an improved type of galvanized can as a receptacle. This can has a collar which fits up closely under the seat and a galvanized lid covering the opening in the seat, which makes it absolutely fly proof. Eleven hundred and sixty-three people have been examined for hookworm disease, and of this number there were three hundred and seventy-four found infected, a much smaller infection than was found when the county was first campaigned, some five years ago. Of those infected sixty per cent. were cured. It is needless to state that the people of this community have a broader conception of health work. New ideals have been created, and today there is but little trouble in obtaining co-operation in improving living conditions.

In North Carolina a method is being used for doing public health work in the respective counties, upon a plan of selecting "health units." This relates to the kind of health work being done, while intensive community work has reference to the staff, working a limited area. The unit plan of health work is productive of splendid results, as shown in that state. The county or schools make the appropriation to bear the expense and the state health department sends a representative to do the work. A health unit may be the vaccination of the people of the county, or it may take the form of an inspection of the school children and the education of the people through the school as a social center.

Effective educational propaganda is the foundation of all efficient health work. This propaganda consists of monthly health bulletins, weekly press bulletins, special bulletins on health subjects, lectures, conferences, circular letters and health exhibits. After all, the most effective method in educating the people is, a demonstration of what may be done. This method has been and is being used in many of the Southern states. The health train of Louisiana is well known as an educational agency. Other states have conducted health exhibits on trains, in co-operation with the Department of Agriculture, and in some states a special car is used for educating people upon the subject of tuberculosis. Each state is achieving a reasonable degree of success in teaching people the principles of right living; so

far-reaching that practically every hearthstone in the state has been brought into sympathetic relation with the activities of the state board of health. It is now evident to these health officers that the people are ready, and the responsibility rests upon them to work out plans which will be practical and productive of the results desired.

The best index of the great progress which has been made in health organization and activities of the Southern states is, perhaps, the increased popularity of departments of health and their activities among the masses; and the growing desire on the part of the people to co-operate in every way possible to improve the sanitary conditions of community life. There is no section of this country which has made greater strides during the last ten years in constructive sanitation than has the South. In many respects this development has been beyond the expectation of the most sanguine, and it promises to sanitarians the most far-reaching results in future health activities. The foundation has been but in some of the Southern states the educational methods have been so effective and laid and we should look well to the character of the super-structure.

In the future health departments must be conducted with a view to greater efficiency and more rigid economy. It is true that, from a humanitarian standpoint, life is invaluable and cannot be measured in dollars and cents. However, from a practical standpoint, all health activities must be based upon business principles. Therefore, the per capita expenditure, when compared with the results achieved, will invariably be used, in a measure, as an index to the degree of efficiency.

The board of health, when properly organized and of the right size, can be of immense value in reinforcing and strengthening the work of the state health department and local health organizations. The state board of health should be so appointed as to have during each state administration a majority of old members. This may be obtained by having from seven to eight members on a board and by increasing the tenure of service of each member. Each member should serve, in other words, six or eight years according to the number on the board, and only one member should be appointed each year. This will largely remove from the operations of the board influences which make for inefficiency.

No health department can be conducted upon the most efficient basis without having an executive officer of training and experience, devoting his time to the work. He should be elected by the board of health and his tenure of service should be at the pleasure of the board. This will insure permanency in plans and greater efficiency in all policies of the department of health.

The ideal health organization should consist of a board of health, informed, interested and co-operating with the health department, the executive officer devoting his time and thought to the health problems of the state, and with a staff of loyal health workers waging a relentless warfare against the preventable diseases. The central organization reaching out through its long arms—the local health organizations, and touching the life of the people in every community in every county of the state.

The county should be a unit in local health organization. Each county should have a whole-time county health officer, with the proper office equipment and at least a stenographer and one field assistant. I would not for a moment discourage in any way the appointment of whole-time county health officers, but it seems to me timely to sound a warning about advocating whole-time health officers for each county in any Southern state at the present time. In the first place, there are not sufficient well-trained men to fill these positions, and in the second place, in many of the counties the people are not in the attitude to provide the proper machinery for the county health organization. One man could do a great deal of good in the county, but the possibilities of his work will, of necessity, be limited without proper equipment. Moreover, as these health officers are appointed, they should be under the direction of some official of the state health department. Uniform plans should be adopted and the work carefully supervised and properly correlated and co-ordinated with the central office. Until this can be done, it would seem advisable to have whole-time district health officers, who may supervise more closely the work of

the part-time county health officer; and there would in time grow out of this system an efficient health organization in each county. In my opinion, the plan of selected units of health work in each county, and doing intensive community work, offers much better results at the present stage of health activities in the South than a one-man county health organization.

A great need of each department of health is a division of child hygiene. This phase of health activity seems to be in its infancy among the health organizations of the South. It is true that some sporadic efforts have been made in the way of issuing pamphlets, giving lectures and sending a "baby booklet" to the mother through the bureau of vital statistics on receiving the report of the birth of a child, and by having baby contests. But in reality no systematic work is being done in the prevention of infant mortality. The possibility of effective work in reducing the death rate of infants is so well established that it would seem that more attention would be given to this health activity. A most important factor in reducing the death rate of infants is the licensing, supervising and instruction of midwives. In addition, there should be systematic educational propaganda for the instruction of mothers of the state, and visiting nurses should be employed when possible to visit the homes to teach what should be done to protect the child. This should be supplemented by milk stations, consultations, baby contests, dispensaries and hospitals for the care and treatment of those in need. Only a few Southern states are active in the prevention of ophthalmia neonatorum. It is certainly the proper function of the state health department to stimulate and work out a system for more definite results in the field of child hygiene.

In only two Southern states at present is there a bureau of communicable diseases with a competent epidemiologist at its head. The purpose of the board of health is the prevention of communicable diseases, especially the more serious and spectacular outbreaks. The first step required is to obtain morbidity reports from the physicians of the state. This should be done through the county health officer. There should be uniformity in the collection of morbidity statistics, and to this end a model morbidity law was approved June 16, 1913, by a conference of state health authorities and the United States Public Health Service. But this has been adopted for "Rules" in collecting morbidity statistics only by the boards of health of Florida, South Carolina and Mississippi. In Mississippi during the past year or more an average of over ninety per cent. of the doctors have made morbidity reports through the county health officers to the state board of health. Such statistics will prove of great value, when properly analyzed and tabulated, in devising ways and means of attacking the communicable diseases.

In addition to the rules and regulations which may be made for controlling epidemics, each of the communicable diseases offers special problems for its prevention and control. With the exception of the hookworm campaign and the splendid work of the United States Public Health Service, in the main only general methods have been used by the Southern states in the eradication of disease. The time has come when more concentrated effort must be made and more definite results obtained, if we would increase and hold the confidence of the public in the work being done. The number of cases of a disease in a state must be decreased and the death rate reduced. The records must show this result in an unmistakable way. It is only when a campaign is waged from year to year against a disease, or a group of diseases, admitting of more or less uniform procedure, that such a result can be guaranteed.

To illustrate, an immense amount of educational work has been done against malaria and much good has been accomplished, but the methods have been haphazard and of a general nature. While the malaria index has been reduced in many municipalities, there is evidence to show that the disease is actually increasing in many rural districts. No measureable progress is now being made in the Southern states in the prevention and control of malaria. The forces and conditions causing this disease are at present more than balancing the agencies employed for its eradication.

It is well known that malaria can be eradicated by the use of any one of three methods, viz., (1) the extermination of the mosquito, and incidentally the protection

of the people against infection; (2) the disinfection of malaria carriers and the prevention of infection by the use of quinine; and (3) a combination of these methods. In the prevention and control of malaria in a county, which method will be productive of the largest results, with a reasonable expenditure of funds? It has been shown that if the homes of a community are effectively screened the malaria index would be reduced only about thirty per cent. While screening is practicable in towns and cities and should always be advocated, it would not be possible to use this method as a uniform procedure in any rural community or county of the South, for the reason that the average cost of screening a home is from $18.00 to $20.00, and there are many homes that would have to be reconstructed in order to be screened. Therefore, screening as a means of protecting people against the mosquito has its limitations.

As to the question of drainage, while it is possible in towns and cities and in certain communities, there are immense areas in all of the Southern states where drainage is impracticable. The cost is prohibitive, and even where drainage is being effected conditions are left which permit the breeding of mosquitoes.

It would seem, therefore, that the proper use of prophylactic and curative quinine, under average rural conditions, merits special consideration in a plan of attack against this disease.

But in conducting an intensive campaign for the disinfection of malaria carriers, there are many problems yet to be solved, or about which there should be a better understanding. For example, what should be the prophylactic dose of quinine to give the best results in such a campaign? What dose of quinine will disinfect malaria carriers in a reasonable time with least inconvenience. Should a campaign be conducted only through the months of the year when there are no mosquitoes? And other questions of equal interest and practical importance need to be solved. It is encouraging to state that investigations are being made along these lines which promise definite results, and it is believed that it is only a question of a relatively short time when such information may be used in intensive campaigns against this menacing disease. In the same way tuberculosis, typhoid fever and other infectious diseases must be attacked by the intensive method, and therefore the problems peculiar to each communicable disease must be investigated with a view to efficiency and economy.

These facts are presented to this Section with the desire that more uniformity of procedure may be developed throughout the South in the control of infectious diseases and also with the hope that there may be a more thorough co-operation between the different states. The health problems of the Southern states are essentially the same. The machinery required for their solution varies only in minor details. But if we are to make the desired progress during the next ten years, the home must be the point of attack. Therefore, the plan of operation must be definite and comprehensive, the method intensive and not general. The point of view must be steadily fixed upon the goal that increasing human efficiency and saving human life is worthy of our best talent and greatest effort.

THE ROLE OF THE COUNTY HEALTH OFFICER IN PUBLIC HEALTH WORK*

By T. M. Dye, M. D.,
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The duties of the county health officer are so multitudinous and the opportunities for work so numerous that the conscientious officer finds himself embarrassed,—embarrassed because the demands made upon him are legion, and the time at his disposal limited. Now, this condition obtains wherever the function of public officer is combined with that of private practitioner, and the solution is the all-time county officer.

Until society demands that at least one man in each county devotes his whole time and service to the preservation of public health, then the part-time officer must use his best judgment in an effort to make work and time harmonize. In other words, he must pick the wheat from the chaff and

*Read in Section on Public Health, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

plant only the best grain. It is this selection of seed that brings me here today, and it is the incentive for this paper.

Along what lines of endeavor should the officer devote most time and talent, is a problem confronting each man following his appointment. Local conditions peculiar to the county of course often suggest to, and demand of him certain labors.

However, as a great Southern problem, the work of education is the paramount issue, and promises the greatest harvest. This eternal preaching and teaching of the fundamental laws of hygiene and sanitation will spring up and bear fruit even in the most barren places.

The most hopeful fields for sowing are in the schools. After a man reaches the age of 25 he is well-nigh hopeless, but the impressions made upon the young mind of the child during the formative period become permanent essentials. This is as true in health matters as in religion.

The opportunities offered the county health officer in teaching school children are unlimited. He can always command the support of the teacher, and if he is discreet he can always attract and hold the attention of the child. Not only do the children listen, but they remember, and remembering they assimilate, and before they have reached manhood and womanhood they have become thoroughly saturated with the knowledge that certain practices are harmful.

Even in the most remote rural sections, where ignorance is the guiding genius of the adult, and where sanitation is looked upon as effeminate; even here the children can be educated into right living.

In my immediate section the Negroes predominate in the ratio of about six to one, so much time must necessarily be devoted to them. They are easily taught; not only the children among them, but likewise the adult. They do not so early reach that age limit where they cease to learn. This probably is due to the fact that the Negro's mind always remains that of a child. I have found it most profitable to occupy their pulpits on Sunday. At their conferences and associations, where large numbers of their preachers are gathered, you will be given a most cordial hearing. When you have gained the ear of the Negro ministry you have gone a long way toward reaching the whole race.

I would not belittle the need of periodic inspection of public-serving institutions and other activities now demanding the health officer's attention, but persistent and intelligent educating of the public will make much of this other work unnecessary.

Editor's Note: "The County Unit Plan on Public Health," by Dr. M. M. McCord, Rome, Ga.; and "Public Health Administration and What Has Been Accomplished in Glynn County, Georgia," by Dr. T. F. Abercrombie, Brunswick, Ga., were read immediately following Dr. Dye's paper, and the three papers then discussed together. The other two papers and all the discussion will appear in a later issue.

REPORT OF COMMITTEE ON "STANDARDIZATION OF THE SCOPE OF LABORATORY WORK IN STATE BACTERIOLOGICAL LABORATORIES"*

Editor's Note: This report was adopted by the Section on Public Health at the Atlanta Meeting of the Southern Medical Association. The committee was continued for another year, and desires suggestions from laboratory men in the state laboratories. Correspondence should be addressed to Dr. C. R. Stingily, Director of the Laboratory, Mississippi State Board of Health, Jackson, Miss.

NO. 1. TYPHOID EXAMINATIONS

(a) Differential leucocyte counts in order to differentiate from certain other infections.

(b) Total leucocyte count for same reason as given under (a). This is regarded as impractical except under certain circumstances.

(c) Diazo reaction in the urine should be refused on the ground that it is worthless.

(d) Plating feces and urine for typhoid carriers is impractical as a routine procedure and should be done only from an epidemiological standpoint.

(e) Blood culture for the early recognition of typhoid. Laboratories should provide vacuum tubes for sending specimens to the laboratories for growth of typhoid. As these tubes cost about 35 cents wholesale, the physicians should bear this ex-

*Read in Section on Public Health, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

pense. The test should be performed after the seventh day of the disease.

(f) The typhoid agglutination reaction properly belongs to the domain of the public health laboratory.

NO. 2. MALARIA: EXAMINATION FOR THE PRESENCE OF PARASITES

(a) Films for differential leucocyte count, to determine, if possible, sepsis, post-operative infection, the puerperal state, lymphatic or splenomyelogenous leukemia, malignancy or other conditions that might simulate malaria.

(b) Total counts of red and white cells and estimation of hemoglobin for the same purpose (rarely).

(c) Blood examinations from physicians which are not intended to differentiate malaria and typhoid from other conditions, but only to guide the physician in his private cases. The committee recommends that this is strictly a matter for private laboratory investigations, but if the private laboratory is inconvenient to the patient, it should be done by the state's laboratory, as consultation, and a fee charged.

NO. 3. SWABS

Swabs for diagnosis of diphtheria should include:

(a) All primary cases.

(b) All exposures.

(c) All cases for quarantine purposes.

(d) Swabs from any part of the body for the detection of the Klebs-Loeffler's bacillus.

(e) Swabs sent by any health officer in his effort to check the disease, for carriers, etc.

NO. 4. TUBERCULOSIS

(a) Sputum from patients suspected of having tuberculosis.

(b) Throat swabs from local diseases. Exudates, urine and feces. The examination of milk for tuberculosis does not furnish satisfactory evidence of the disease as a rule. The examination should not be encouraged.

NO. 5. INTESTINAL PARASITES

(a) Feces for the presence of any and all parasites.

NO. 6. GONORRHEA

(a) For ophthalmia neonatorum.
(b) Gonorrheal ophthalmia.
(c) Urethritis.
(d) Vaginitis.
(e) Urine for gonorrhea.

NO. 7. SYPHILIS

(a) Material for spirochetes. As a rule, dried smears do not furnish satisfactory evidence. For dark field examination, the presence of the patient is required. This is usually beyond the capacity of the state laboratory.

(b) Wassermann reaction. Under this head the question of the Wassermann reaction in state laboratories is a matter of appropriation, and for this reason necessarily must be handled by each state according to the existing conditions. Syphilis is regarded as a public health problem.

NO. 8. CANCER

It is the opinion of the committee at present that a fee should be charged for the examination of tissue.

NO. 9. GLANDERS

All material for the presence of glanders, for either practicing physicians or veterinarians. It is the opinion of the committee that glanders among the lower animals does not come within the province of the board of health work. In the great majority of cases this concerns the live stock department only and should be handled by it.

NO. 10. ANTHRAX

The same comments as under No. 9.

NO. 11. SYMTOMATIC ANTHRAX

Same comments as under No. 9.

NO. 12. RABIES

(a) Examination of animals' heads for diagnosis.

(b) Animal inoculation for diagnosis.

(c) Administration of Pasteur treatment.

NO. 13. THE MANUFACTURE OF ANTITOXINS

(a) For diphtheria.

(b) Tetanus.

Comment by the Committee: The manufacture of antitoxins is a question of expediency with the individual states.

NO. 14. VACCINES

(a) Typhoid.
(b) Smallpox.
(c) Rabies.
(d) Tuberculosis.
(e) Vaccines for other diseases.

Comments:

(a) It is the opinion of this committee that typhoid vaccine is of such great value in the prevention of typhoid that each of the state laboratories, if not already producing it, should make arrangements to do so as soon as conditions will permit.

(b) We believe that smallpox vaccine can be economically, and should be, produced in the state's laboratories, for free distribution. We believe that the laws on vaccination can be enforced better under these conditions.

(c) We believe that prophylactic rabies vaccine should be administered in the state's laboratory, free of cost to the citizens, whenever possible. The hygienic laboratory has rendered valuable assistance in this work in furnishing virus free to various boards of health.

(d) Tuberculin. Until the medical profession comes to a definite agreement as to its value, we deem it unwise for the board of health laboratories to furnish tuberculin for therapeutic use.

(e) At present the manufacture of vaccines for other diseases is entirely out of the domain of the state's laboratories.

NO. 15. EXAMINATION OF WATER

(a) Chemical.
(b) Bacteriological.

Comments: In the control of public water supplies, we believe that the systematic laboratory examination of water are essential, but the single examination of private water supplies should be discouraged for the reason that it is of no practical value.

NO. 16. EXAMINATION OF MILK

We believe that the examination of milk can best be handled by municipalities, on account of the rapid deterioration in transit, and also because the laboratory examination forms only one element in the milk control.

NO. 17. THE EXAMINATION OF FOODS AND DRUGS, CHEMICAL AND BACTERIOLOGICAL

We believe that food and drug examination properly belongs to the department of health, and should be done in our laboratories, provided the laboratory budget is sufficient to meet this extra expense.

NO. 18. URINALYSIS

(a) Chemical.
(b) Microscopical.
(c) Bacteriological.

Comments: We believe that the routine examination of urine for diagnosis is not the function of the state's laboratory.

NO. 19. SPECIAL INVESTIGATIONS. TECHNIC

It should be in the province of the state's laboratory to carry on investigation of conditions affecting the public health, but it is obvious that no rules for so doing can be formulated by this committee, as each problem must be considered individually.

NO. 20. THE RIGHT OF THE LABORATORY TO DEMAND INFORMATION REGARDING THE CASES NECESSARY TO MAKE THE DATA CARDS OF STATISTICAL VALUE

We believe that the board of health not only has the right, but that it is its duty to demand such information regarding the patients from whom the specimens are taken as is deemed necessary for statistical or epidemiological purposes and for the proper study of specimens.

NO. 21. RESPONSIBILITY FOR ERRORS THAT MIGHT BE DUE TO LACK OF PROPER SKILL ON THE PART OF THE COLLECTOR, ETC.

The responsibility of the laboratory ceases with the report of a conclusive examination, and the laboratory should not be held to account for a misinterpretation of reports, nor for errors on the part of the sender in collecting or sending the specimen.

NO. 22. APPROPRIATIONS FOR LABORATORIES

The scope of the laboratory work is constantly enlarging, and it is a just and reasonable assumption that larger appropriations will be needed to meet the demands.

There were many other questions considered, such as working hours for employees, the required time for completing examinations, uniformity of shipping containers, methods of collecting, etc. These were regarded by the committee as being

matters to be considered by each board of health separately.

We beg to advise that there are other matters that are being considered by the committee, such as the conditions under which examinations should be made, that is, for example, blood cultures, the time of collecting with regard to the different diseases, etc.

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HEALTH INSURANCE: ITS RELATION TO THE MEDICAL PROFESSION*

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The people in the United States are paying a price sufficient to obtain an adequate medical and surgical service. The amount, however, is spent in such a haphazard manner that the service is not only often inadequate or worthless, but at times actually harmful. For the single item of drugs the United States spends $500,000,000 a year.[1] This amount alone, if properly expended, would pay for all necessary drugs and add $2,000 a year to the income of the 145,000 licensed practitioners. This sum, together with the estimated average income of $1,000 already paid to the doctors, would make an average annual income of $3,000, or an amount which should obtain the very best physicians and surgeons if properly distributed throughout the country. Making an allowance of one specialist to every 5,000 of the 100,000,000 population, each one of the remaining 125,000 doctors would not have to attend the calls of more than 800 persons if the practice is equally distributed.

When it is stated that the people are not receiving adequate medical and surgical treatment, the question under consideration is not the qualifications of these 145,000 doctors nor the quality of service they render. But the intention is to point out the fact that a very considerable proportion of the people are unable to pay for adequate medical and surgical services. And what is more to the point, a not inconsiderable proportion are unable to avail themselves of such service even though it may be free, because they can not afford to stop work. If they did, those dependent upon them would suffer.

Leaving out of consideration that this group of the population is sick oftener than the well-to-do, leaving out of consideration the vicious circle of poverty and disease, and leaving out of consideration the fact that this group can only obtain medical and surgical relief by applying to free or charity institutions, there still remains the great middle class of employed persons who are unable to pay the price of what is now considered adequate service.

In the old days when diagnoses were made by looking at a patient's tongue and feeling his pulse and possibly taking his temperature, the great group of people living in country or town far from medical centres did not feel that they were so badly off. But now with the progress made in medicine and surgery, not only the doctors but the people realize what it means not to have the equipment and personnel found in our modern hospitals. Even for those living in the medical centres, where the services of specialists are to be had, the cost is prohibitive for a large majority of the population. The general practitioner is familiar with the experience of the bank president who spends a thousand dollars to go to a hospital for a gallstone operation and returns cured, while his farmer brother must suffer and die without such relief or accept it as a charity. Even the bank president must leave home and family and often travel long distances to reach these modern hospitals.

For the general practitioner the question of rendering his best service is becoming more onerous. The examination which he is now equipped for carrying out requires so much time and patience that it becomes a question of increasing his

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charges to where the cost is prohibitive for the man of ordinary income or doing the increased service at the old rate of pay and finding that he is not able to earn a decent living for his family.

The doctor, when he faces this dilemma, must decide to confine his practice to the well-to-do, or drop back into the old method of a hurried and inadequate treatment for a large clientele, or render his best service to all, contenting himself in his poverty with the knowledge that his life is worth while.

Before leaving this discussion of the present inadequacy of the medical and surgical service, an important underlying cause of the inadequacy should be pointed out. At present the income of the physician is dependent upon the misfortune of his friends. When his friends are not sick the doctor's income stops. In other words, when his friends are without income they have the further burden of a doctor's bill. This is, to say the least, economically unsound. If the practice of medicine is to be on a sound economic basis the cost of sickness should be met during the period of employment when there is an income. The problem, then, is to furnish an adequate medical and surgical service to the country, the cost to be met during the period of employment. To guarantee that it be within the reach of all, provision must be made for the continuance of a substantial part of the income during sickness, else many will not be able to stop work even when sick.

These conditions, it will be found upon investigation, are met by a properly planned system of health insurance.

"Health insurance, as usually operated under governmental systems, provides that all employed persons in certain occupations, and all persons in other occupations earning less than a specified annual income, be entitled in case of illness to certain benefits.

"Benefits.—The benefits ordinarily provided are:

"(a) Cash payment for a limited period (usually 26 weeks in any 12 months) of a proportion of the wage, or of a fixed sum, to employees, when disabled by sickness or non-industrial accident. (Industrial accidents are provided for under workmen's compensation laws.)

"(b) Medical benefits, which include adequate medical and surgical care, medicine and appliances in home, hospital, sanitarium or physician's office to employees disabled on account of sickness or non-industrial accident during a limited period (26 weeks in any 12 months).

"(c) Maternity benefits, which include cash payment of a small sum in case of confinements of employees or wives of employees.

"(d) Cash payment for deaths of insured persons due to sickness or non-industrial accidents of an amount calculated to cover funeral expenses.

"Funds.—The funds are usually provided by payments from employees, employers and Government appropriations. In Germany, the employee pays two-thirds, employer one-third, and the Government pays for certain expenses of supervision. Under the English national insurance act the employee pays four-ninths, the employer three-ninths, and Parliament appropriates two-ninths. In the case of women and persons employed at certain low levels of wages the payment of employer and Parliament are increased and the proportion paid by employee is decreased.

"Administration.—The administration, both central and local, is usually according to some form of representative government. In the local government, in addition to governmental bodies created for the purpose, unions, industrial establishments and certain societies are utilized for purposes of the local administration of the funds."[2]

Properly organized under such provisions, the physicians should receive adequate pay for adequate services rendered.

There have been several methods proposed for providing medical and surgical services for the beneficiaries. The bill drafted by the American Association for Labor Legislation provides that medical aid shall be furnished by the carriers (local administrative bodies) by means of one of the following methods:

"1. A panel of physicians to which all legally qualified physicians shall have the right to belong, and from among whom the patients shall have free choice of physicians, subject to the physician's right to refuse patients on grounds specified in regulations made under this act; provided, however, that no physician on the panel shall have on his list of insured patients more than 500 insured families nor more than 1,000 insured individuals.

"2. Salaried physicians in the employ of the carriers among which physicians the insured persons shall have reasonably free choice.

"3. District medical officers, engaged for the treatment of insured persons in prescribed areas.

"4. Combination of above methods."

Provision is also made in this bill for adequate hospital and sanitorium treatment and for medical and surgical supplies. Further, provision is made for the employment of medical officers by the carriers for the purpose of certifying to the

disability of insured persons claiming benefits and for the further duty of supervising the character of the medical service in the interest of insured person, physician and carriers.

With adequate pay it is believed that the panel system which provides for free choice among all registered physicians will probably be the most satisfactory of all plans, as it will not disturb the old relation of family physician and will not force upon any person a physician not of his own selection. The methods of payment in this system may be on a capitation basis, or a fee system so much per visit or a combination. Objection has been raised to the panel system paid on a capitation basis on the ground that it is nothing more than "lodge practice." But with a reasonable limitation on the number selecting any one physician and a reasonable capitation fee there would be no comparison between it and the old "lodge practice" or "contract practice" so condemned by the medical profession.

Referring to "contract practice," the *New York State Journal of Medicine* has this to say:

> "All medical service is really a contract, and many physicians under salaries, such as those with insurance companies or railroads, are not condemned, nor do they lose caste by accepting such contracts. But any contract which carries with it an unreasonable amount of work by the doctor, which in turn forces neglectful, hurried service to the patients, is always condemned."

With a reasonable capitation fee the physician would not have to take on more patients than he could give adequate service in order to make a living. And, furthermore, with proper limitations as to the number permitted to choose one physician, he will not be permitted to carry on his list more insured persons than he can give adequate service to in order to swell his income.

This method of capitation payment has the advantage over the fee system per visit in that it places an increased value on the healthy patient, whereas on a visit basis the increased value is placed on the unhealthy patient. Surely it is sound practice to make it to the doctor's advantage to keep his patients well.

Some objection has been made to this method on the ground that the sickly persons would be refused by the panel physicians. This objection could be met by allotting these "leftovers" equally among all the physicians, or, if the number is sufficiently large to warrant the expense, a salaried physician could be employed to take charge of those refused by the panel physicians.

The provision for medical aid by salaried physicians has the objection that it limits free choice of physician to the number employed on this basis. Furthermore, it has been stated that the salaried physision will not be so anxious to please his patients as he would be if they had the privilege of changing physicians every twelve months. It must be admitted, however, that this method has its advantage where the guarantee of a fixed income must be offered to get doctors to locate in certain districts.

The foregoing discussion of administration of the medical service is based upon the presumption that the administration by the carriers will provide for adequate remuneration for the physician's service and equal consideration of all doctors registered on the panels. The fact must not be overlooked, however, that a health insurance system will give a compact organization to the carriers, whereas the organization of the physicians is a very loose one. This difference will give a tremendous advantage to the carriers in their annual bargaining with the doctors on any basis of payment; and the tendency may often be to drive the cheapest bargain possible in order to make a good showing for the local administration in power. This cheapening of the medical service may appear to be an economy to the lay mind.

Differences of this character will very probably occur if the medical profession does not see to it that the organic acts creating health insurance systems are so drawn as to prevent just such a probability.

In Germany, controversies occurred between the "sick fund league" and "medical league" over the questions of the "free choice of physician" and the graduation of fees. The controversy reached such a stage that a "doctors' strike" was threatened to begin January 1, 1914, and was only averted by the "Berlin Agreement" of December 23, 1913.

In England there was a long struggle between the British Medical Association and lawmakers which was finally settled by the granting of free choice among panel physicians under the act and the allotment of a capitation fee which has worked out fairly satisfactorily.

The one great advantage which the British physician has over the German physician is the fact that medical benefits are administered by governmental agencies according to county or county borough, whereas in Germany the "carriers," which corresponds to English "approved societies" administer the medical benefits. Furthermore, the physicians have legal representation in the administrative body, whereas in Germany the "carriers'" administrative body is composed only of representatives of employers and insured persons.

The same controversies are as liable to occur when physicians are employed on a salary basis as when on a panel and capitation basis, if the organic act places the administration of the medical benefits in the hands of the "carriers." In this connection it must not be forgotten that local administration of any character too often drifts into local politics and the selection of salaried physicians by local bodies may sink to a very low level controlled by local or "ward bosses."

With the administration of medical benefits by the state through a directorate on which the physicians have representation as well as the "carriers" this situation is not likely to be quite so bad.

In the administration of medical benefits the matter of disability certificates for insured claimants has proven a difficult problem to settle. It must be admitted that where this has been left to the family physician, many have been entirely too complaisant about signing doubtful certificates.

Experience has proven that this can probably be satisfactorily settled by the appointment of medical referees to sign disability certificates and to supervise the medical service in the interest of the insured persons, attending physicians, and the carriers. It goes without saying that a referee can not justly be in the employ of any of the parties interested in his decision. So that after all questions are considered the most efficient administration of the medical benefits may be expected by providing that they be administered by the state and especially that the medical referees be state employees.

It is not necessary to point out to doctors the advantage of having their work supervised by doctors (medical referees) rather than by lay officials.

The many problems to be worked out in order to obtain an efficient medical service under health insurance laws has been touched upon for the purpose of arousing the interest of the medical profession to the importance of getting together and working out a plan which will protect their interest and at the same time provide an adequate medical and surgical service for those to be insured.

Now is the time for this action before it is too late. It will not be many years before health insurance laws will begin to be enacted by some states, and it is better by far to have these matters adjusted in the drafting of the bills than to fight for amendments before lawmaking bodies.

Health insurance acts will constitute the next important step in social legislation; and with an adequate medical and surgical service it will mean a new era in the development of medicine.

The wonderful progress in medicine and surgery which has made so many things possible will be brought within the reach of all the people and the prohibitive cost will be removed. Well equipped dispensaries, hospitals and sanitoria will be provided in every district within easy reach of all.

The family physician will not be handicapped in his practice by the lack of intelligent nursing and the many other things which mean so much to the early and complete recovery of his patients.

Much of the pain of childbirth will become a thing of the past and women will not have this dread weighing upon their minds, and will leave their bed of confinement free from many of the physical ailments which so often make life a burden.

The infant death rate will be materially reduced by intelligent care of mother and child during the few weeks which mean so much to infant life.

Team work of the general practitioner and the various specialists will be a mat-

ter, of course, for all patients in all districts and not confined as at present to a few medical centres.

When the medical service is placed upon such a scientific basis and the work of the medical team is combined for the study of the ills of the patients, many defects will be discovered and remedied so that the efficiency and lives of many will be increased and lengthened.

In the foregoing the discussion has been confined to the clinical side of an adequate medical service and the relief features of health insurance. The possibilities of an adequate preventive medical service, however, are much more wonderful than the clinical.

Health insurance will place a definite value upon each day of sickness and compel those to pay this price who are responsible for disease causing conditions. This will create an economic pressure for disease prevention, for provision is made that those who pay will save in direct proportion to the number of sick days prevented. They will be ready to make investments for health; and what is more to the point a properly organized health insurance plan will supply the funds for investment; and the more adequate the health machinery the greater will be the sum available for such investments.

Up to the present time the bills proposed have not provided in any way for a preventive medical service. They contain no authority for organizing health machinery or for utilizing existing health agencies. In other words, an economic pressure is created for disease prevention, but machinery is not provided through which it may operate.

An excellent opportunity is offered by which the specialist in preventive medicine could be introduced into the plan through the administration of the medical benefits. It would be a simple matter to provide that the medical referee, referred to above, be a medical officer of the health department, and employed by that department after careful examination as to his knowledge of preventive medicine as well as his skill in diagnosis.

This would bring to the service of the health insurance system a corps of trained specialists clothed with all the authority of the health department. Entering the home of every sick insured person to certify as to his disability they would have an eye trained to see quickly unhygienic conditions as well as the technical knowledge of remedial measures.

Medical men, who are now only dreaming of an adequate medical service as ideal, will come into the realization of this if they will only work out practical provisions for it in connection with health insurance bills and lend their aid to those who are already at work in this field of social legislation. Should this dream come true it would doubtless reduce the score of human misery and perhaps increase that of human happiness.

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DISCUSSION

Dr. Lloyd Noland, Birmingham, Alabama.—Dr. Warren is certainly to be congratulated on the very excellent paper he has given us and the very high ideals which he has expressed.

The whole question of health insurance is such an enormous one and the many phases involved so numerous, that it is almost impossible in any presentation or discussion of the subject before a body of this kind to go into the matter very deeply. I believe there is no doubt that health insurance for industrial workers and wage earners in this country is badly needed, and there is very little doubt probably in our own minds that it is coming. The systems in vogue in England and Germany are in a certain way satisfactory, but controversies have waged about any number of details. I have had a chance very recently to go into the matter somewhat in England. I have talked to a number of men, some prominent medical men in England and some of the practitioners in small places as well.

At present, the panel system is in vogue in both Germany and England to a certain extent. The system carries with it the right of every registered physician in the country to be placed on the panel if he so desires, and the right of every insured individual to have a free choice of any doctor on the panel. In England, I believe about ninety per cent. of the practitioners of the country at the outbreak of the war were on the panel.

There has been a great deal of dissatisfaction caused in regard to the thing that Dr. Warren has touched on, namely, trouble of the family doctor signing certificates of disability without due investigation. In England the signature of the at-

tending physician only is required for the insured individual to draw benefits, and this has led to trouble, I am told. Dr. Warren's suggestion that a referee cover the matter is a great advance in that respect.

The carrier system, I believe, is not satisfactory as a whole in England or Germany. At present, it seems to me, there are certain things which every medical man should work for in connection with this legislation. First of all, the whole matter should be put in the strongest possible hands that we can get; in other words, in the hands of the Federal Government. If public health and care of the sick is not an interstate matter, it comes close to it, and if in any way the Federal Government could handle a proposition of this kind, it would immensely simplify the whole process and cut out the carrier system which, in England and Germany, is largely unsatisfactory.

Secondly, I believe that only salaried physicians should be used, those who are duly qualified and paid adequate salaries, the appointive power to be in the hands of a member of the Cabinet, the President of the United States or body delegated by him. It seems to me, there is a big chance in this country to improve the treatment of the public. We all know that unfortunately there are many hundreds of men, if not thousands, who are not really qualified to practice medicine, and who ought not to be allowed to practice medicine. If we are going to look after the public, if the insured individual is looked after properly he should receive the best procurable skill, and this method of selection would give a big opportunity to improve the quality of medical service furnished the public.

In the third place, I believe that cash benefits should not be paid. Certainly, a greater part of malingering would be cut out. The benefits to my mind should be paid in hospital treatment, medical treatment, and aid of that character as well as in food and clothing for the family and for the insured individual. Certainly by cutting out cash benefits the payments of the insured individual would be greatly lessened, and, at the same time, guarantee the necessities of life to the insured individual and his family and freeing us from the danger that we would be overwhelmed with in commercializing the whole scheme in this way if cash benefits were paid and the cash systems were used.

Dr. Roy K. Flannagan, Assistant State Health Commissioner, Richmond, Va.—There is one thing that has impressed itself upon my mind in connection with this subject, namely: that it is "up to" the doctor to retain the leadership in this matter as in public health matters generally, or this leadership will be snatched from his hands.

This health insurance, this modified contract work, if you please, is coming. There is no doubt about it, and we may as well realize it first as last. The socialization of the medical profession eventually will be the only way out for the doctor. Shall we wait until the social worker and the lay legislator crowd this thing upon us in more or less unbaked form? Shall we not lead in this great movement with which we are so intimately concerned?

Dr. Warren points out very significantly that the public health side of this question has not been touched upon in the legislation that has been offered. Our legislators are laymen; they are men who are framing and enacting laws for the people that are most interested, and the people most interested in these things up till now have not been public health men nor to any considerable degree practicing physicians. If health insurance legislation is to serve the highest interests of the people, I believe the doctors must take a leading part in framing it, so do not let us shut our eyes to this thing, but follow the road which has been so ably pointed out by Dr. Warren and by united effort endeavor to put the pressure where it can bring forth the best result. We will thus not only bring benefit to the people as a whole, but the doctors and the public health interests will not be forgotten.

Dr. John McMullen, United States Public Health Service, Lexington, Kentucky.—I consider that Dr. Warren's paper is a most important one. As public health officers we know better than we otherwise would have of the insanitary conditions that prevail, and it appeals to me most where the doctor says that it reaches those people who would not otherwise get attention. I have often wondered what would become of the people who live far in the country and mountainous districts, so far as medical attention is concerned, when our generation of doctors dies out, and this high standard for doctors, making them highly educated men which will necessarily decrease the numbers of doctors very much. Can they be influenced to go and practice medicine in those out of the way communities that promise them so little in the way of return? I recently asked this question of a public health man and he was of the opinion that the doctors would be glad to do it but I do not think so. As to the statement of Dr. Noland with reference to cash benefits it would seem to me that it would be better to give the benefits in other ways by the actual treatment of the cases. As Dr. Warren has pointed out, those women who go through life in misery after child-birth would have the benefit of the best clinics and be relieved. Without this cash benefit it seems to me it would be to the best advantage to give the people the benefit of actual treatment and the necessaries of life.

Dr. Joseph H. White, United States Public Health Service, Memphis, Tenn.—At a meeting in New Orleans about two years ago, this subject was presented by Dr. Warren for the first time and in a most able manner.

A gentleman there present and himself a profound thinker, pronounced it the most profound thought he had heard enunciated and stated that he was convinced that this was one of the biggest problems before the American people. I concurred in that opinion then, and I do today.

In talking to Dr. Irving Fisher about his ideas with regard to a National Department of Health, he said to me that he wanted to put every instrumentality of the government that touched public health under a department of public health. Then, I said, Dr. Fisher, you will abolish every other department of the government because there is no phase of human activity that does not impinge

directly or indirectly upon the question of public health. Wherever we turn, in whatever business we engage, we find the constant intrusion of the question of health and the ever present suggestion that health and economic questions are inseparable.

The suggestion made by Dr. Warren that the physician attending the sick in pursuance of this proposed law can also act as health officer is eminently practical.

The supervision of the accuracy of diagnosis and the reality of the necessity for relief could well be in the hands of the health officer, state, municipal or district as medical referee and upon him devolve the duty to see on the one hand that the people were given proper attention and on the other that there was no imposition upon the fund through the drawing of cash benefits to which there was no just claim or physicians fees not earned.

Such supervision is necessary and must be by a salaried man.

As to Dr. Nolands' suggestion that all physicians be salaried, let me say, we are all human. We are all apt to lean towards the people who employ us, and this medical referee as a public health officer will prevent that.

Gentlemen, I have been a public health officer practically all of my life. I am a physician on salary, therefore, I think I have a right to speak as plainly as anybody can on this subject, and I say that will never do. You will have too many loafers on your jobs. The panel system by which a man may select the doctor he wants, and thereby receive good service, is the system, and it is the only way to secure good service in all cases. Unless you have a system whereby the best service will be rendered to the people, it will degenerate to the depths of inefficiency as is the case in the old system that obtains in a good many parts of the country of having a physician for the poor, of whom you hear the poor themselves speak as a "poor physician."

The system proposed by Dr. Warren has been carefully thought out as I happen to know from an intimate acquaintance with him, and this system will in time, if worked out along the line he has suggested, be the biggest help to the health organizations of the nation, to the state, the county, the municipality, that one can possibly imagine, for the basis of all perfect public health work is to know and to have, in the first place, morbidity, mortality, and vital statistics. Under this system we will come nearer a hundred per cent. of such information than under any other system conceived by man. With such a system as that available the health officer can put his hand upon every case of scarlet fever, measles or what not in the community, and we ought to be able to do much better public health work than we are doing today.

I am going to ask that we hear from a man who formerly was health officer of a big city and one of the most efficient city health officers in the world—Dr. Evans.

Dr. William A. Evans, Chicago.—Dr. White is correct without doubt. Dr. Warren is correct. This is the most comprehensive health measure that has ever been proposed. Dr. Warren has suggested, however, that effective as it has been in other countries, it should have been more effective, and when we come to plan for it in this country we should make it so, and this we can do by writing into it more preventive medicine than has been written into it in the other countries. We can make preventive medicine a distinctive feature of this measure in this country. It is the most fundamentally important question to the medical profession that has ever been proposed as well as to the people themselves. When this measure was proposed in England, it was opposed as Dr. Warren has told you, by the British Medical Association which nearly bankrupted itself trying to defeat it. And yet for the profession it was one of the best economic measures possible for Great Britain. Less than half of the people sick and in need of medical attention are getting the benefit of it; a large per cent. of those getting it are not paying doctors for the service that is being rendered. Easy to calculate, it means dollars and cents for doctors; it means bread and butter for doctors; it means a better system and more opportunity for taking care of their families than under the present system, and yet with that it is not as fair as it should be. Lloyd George, when he came to draw this bill, consulted with every interest; he got not only every bit of information he could on the subject in the whole history of civilization, but he counseled with the organized medical profession. It looks very much as though when our legislatures, federal, local or state, take up the matter, they are going to be in much the same position, and we need to have representatives of the medical profession who will see to it that every interest of the medical profession is conserved in drafting this proposed legislation.

This is the most far reaching and the most complete public health measure that has ever been proposed in the history of the world.

Dr. B. S. Warren (closing).—In reference to the English act, I will read an extract from the London letter to the *Journal of the American Medical Association* in a discussion of the subject of the English act October 16, 1916:

"A further development possible is a linking up of the insurance scheme with the great public health services. With the example of the army providing all medical services for a large fraction of our male population, it cannot any longer be contended that the prevention of disease and the cure of disease are separate questions. At present the physicians dealing with prevention and the physicians dealing with treatment in civil life are unrelated in an administrative sense. This absurdity is made clear by a single example—the treatment of tuberculosis. The great hope in this case is prevention; and as the patient himself is the source of infection, treatment and prevention become merely aspects of the same problem."

I wish to emphasize the medical referee feature. The medical referee can be made a public health man without any increase in cost. He could be made a public health officer of the state and be an all-time local health officer. He could act for the county if there is not sufficient money to pay for

both. Such a plan would give a personal touch between the health department and the people. The medical referee would of necessity have to go into all the homes of the sick insured persons. He would be a preventive man, and would be vested with the authority of the state or local health departments. Through him the health department would be on the job all the time.

It is unnecessary to take up your time to point out the various possibilities of this plan, but in the matter of records alone, as Dr. White and Dr. Evans have pointed out, the uniform certificate made by men trained in diagnosis and trained in making reports will be more valuable than if made by family physicians. There will be uniformity in these statistics.

We all know that preventive medicine is coming to be as much of a specialty as surgery. The doctor cannot be a doctor of preventive medicine without special training any more than he can expect to be a surgeon without special training.

The men who have drafted health insurance bills have the economic point of view almost altogether; they have the idea of industrial unrest; they have the idea of social service, the betterment and uplift, and all that, but they do not have the doctor's point of view, and it is time doctors were getting on the job.

As to the matter of cash benefits, I do not want the doctors to think for a moment that the cash benefits should be left out. They have got to come. You are thinking of one side of it, but the cash benefits are going to make a man economically independent while he is sick. You do not want it in the nature of charity.

If it comes under the nature of charity, a gift of goods, a barrel of flour and clothing, you kill the whole measure. Get that out of your minds right now. You must remember the vicious circle between poverty and disease. Poverty is a cause and effect of disease, and you are going to prevent as much disease by preventing poverty as you will by curing disease.

Author's Note.—Since the above discussion took place a revised edition of a bill proposed by the American Association for Labor Legislation has appeared which provides for recognition of the medical profession to a much greater degree.

AUTHORS' ABSTRACTS

Tropical Diseases and Public Health

Why Fumigation is Ineffective. C. E. Ward, Cleveland, Ohio. Modern Hospital, Vol. VIII, No. 2, February, 1917, p. 115.

Fumigation as generally practiced is ineffective, a waste of money and an injustice to our patients and operating surgeons.

The modern hospital is bending every effort toward efficient training, yet the average nurse knows nothing as to the importance of fumigation, the proper method, or the merit of various substances in use. Inadequate methods, offering a false sense of security, should be abandoned.

Discontinuance of fumigation has been advised. I am in accord with this proposal if it is to be done in a haphazard manner. Investigation discloses that fumigation is attempted through the employment of many inefficient methods. *Formaldehyde in sufficient quantity thoroughly fumigates*; and it can be bacteriologically proven.

Fumigation is costly. If worth doing at all, it should be done properly. Tests demonstrate that one-half pound of potassium permanganate as the agent is required to expel the gas in one pint liquid formaldehyde,—this quantity being necessary to fumigate one thousand cubic feet of space. Permanganate for fumigation is now prohibitive in price. Other chemical agents far superior for fumigation are in the market at one-tenth its cost.

Many contagious diseases have been contracted in institutions to the wonderment of those in authority. The answer is imperfect fumigation, or none at all. If fumigation is important, we owe it to our patients and our consciences to employ the method which will really fumigate.

AUTHORS' ABSTRACTS

Medicine

(Continued from page 212.)

Blood Pressure in the Aged. L. M. Bowes, Chicago, Ill., The Journal of Laboratory and Clinical Medicine, January, 117, p. 256.

In making a study of 150 cases between the ages of 65 and 95, it was found that only repeated readings of both systolic and diastolic pressures were of value. Also both arms should be used for observations as an inequality of the pressures of the two sides is common in arteriosclerosis.

The pressure in the armlet must not be maintained too long, because the blood vessels in some are very brittle and may rupture, causing a hemorrhage to occur on the anterior surface of the arm.

The average systolic pressure increased to the age of 85 and then decreased. It was also higher in women than in men except after 90.

Only about 25 per cent. of the cases of arteriosclerosis had a high blood pressure, the pressure falling with involvement of the heart muscle in the process of fibrosis, resulting in chronic myocarditis. There was a high blood pressure in all cases of chronic nephritis. A sustained hypertension of both systolic and diastolic pressures was found to diagnosticate cerebral hemorrhage from cerebral embolism in most cases.

A low diastolic pressure was present in all cases of aortic regurgitation which, with an increased systolic caused a high pulse pressure. A high pulse pressure was also frequent in arteriosclerosis.

A sustained high pulse pressure usually ended in a failing heart.

SURGERY, GYNECOLOGY, OBSTETRICS AND GENITO-URINARY DISEASES

GASTRIC CANCER*

By W. A. Bryan, M. D., F. A. C. S.,
Nashville, Tenn.

The intent of this paper is closely concerned with the diagnosis of cancer of the stomach, and the conclusion reached may be announced in the beginning as being valuable chiefly in a negative way; but the benefit to be derived thus, if there is benefit to be derived, should be justified by two commonly known facts, which are the relative frequency with which death from cancer of the stomach occurs, compared with its correct diagnosis; and in the second place the relative infrequency with which we may offer a chance of cure by the only plan of cure, as compared with the number of cases correctly diagnosed as cancer of the stomach. To state it briefly, we frequently do not diagnose cancer of the stomach at all; and when we do, the diagnosis is usually made too late to offer any hope to the patient.

Permit me to ask sincerely: Does anybody know how to diagnose cancer of the stomach in time to offer the patient a chance of cure, even after exclusion of the rapidly growing, viciously malignant forms that we seem at present to have no control over, whether they arise in the stomach or elsewhere? In the following pages it has been my effort, as much as possible, to free myself from the traditions of the past, to look this qestion squarely in the face, and to answer it not as I have read the answer, but as I have seen it in actual practice, both in my own hands and in the hands of those who above all others should with facility make the diagnosis, namely, men who are devoting their lives to diagnostic work. My task is to tell the truth and to admit the truth. This task has been set only after untiring anxiety and effort to find a group of symptoms and signs that I might employ with some degree of certainty in my efforts as a practical surgeon to recognize the presence of cancer of the stomach prior to the development of a palpable or visible tumor, which makes cancer a rather safe guess; and prior to the development of pyloric obstruction, which renders the diagnosis of cancer less necessary, except from an academic point of view, because the recognition of this obstruction is ample warranty for opening the abdomen and thus offering occasion for a correct settlement of the pathology by more direct means of observation. My problem has not been these so much as to determine in the absence of tumor and obstruction when it was my duty to open the abdomen with some reasonable assurance of finding cancer. It has never gone so far toward self-ilusion as to hope for anything approximating uniform success. But the will-o'-the-wisp still draws me on.

To establish clearly the task undertaken, it is necessary—first, to review the development of cancer in general; second, to apply these facts to the growth of cancer in the stomach; third, to review the symptoms of cancer in general; and fourth, to apply this knowledge to cancer growing in the stomach. This with the frank understanding that omission will be made of those cases in which there is definite tumor formation and those in which there is sufficient evidence of obstruction at the pylorus to make its presence clear.

The facts we know about the growth of cancer in general are: First, that at its incipience it is a very narrowly restricted growth, probably always microscopical. Second, it gradually grows into the surrounding tissues, displacing and destroying them, until it becomes a definite tumor, whose limits may or may not be easily defined either with the microscope or in the gross. Third, other organs become invaded and the lymph-spaces, lymph-channels and lymph-nodes of the region become involved by direct growth of tumor processes into them or by the escape of cells which lodge and develop into secondary regional tumors. Fourth, the last stage in the spread of the growth is metastasis through the blood stream, the time of the development of which after the

*Read in Section on Surgery, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

beginning of the tumor depends upon the nature of the growth, the disturbances to which it is subjected, and the accidents pathologic or traumatic which befall it. Fifth, invasion does not confine itself to the growth of the tumor within the tissue, but may arise from direct implantation to an organ in contact with the tumor-bearing surface, or remote, by the liberation of cancer cells which are carried by gravity or otherwise to more distant points before they lodge and grow. Sixth, cancer tissue is subject to various degenerative changes on account of poor distribution of its abundant blood supply, and sundry accidents of ulceration, hemorrhage and infection are encouraged thereby.

When the items listed above are considered in their relation to cancer of the stomach, certain facts come out, the value of which in the diagnosis, prognosis and treatment of gastric cancer cannot be overestimated. The beginning of cancer of the stomach is just as restricted as it is elsewhere and is always found to arise from the mucosa or some of the glands derived from it, usually the latter. This simply means that the early cancer of the stomach is found on or beneath the mucous lining and not primarily as a subperitoneal tumor, and that therefore it should, normally, be well under way by the time it reaches and penetrates the outer coat.

The gradual invasion of the stomach from this small beginning takes place in two ways. First, there may appear a distinctly localized mass of considerable size that becomes palpable easily through the abdominal wall, the so-called unicentral development. In other and perhaps more numerous instances, the development is multicentral, in which the growth invades large areas of the gastric wall by the development in the wall of gradually widening new centers of cancer. It is in such cases that Hauser has claimed that the glands adjacent to the growing masses become converted into cancer, a claim that probably cannot be substantiated, but is of importance to us here in that it demonstrates the manner of invasion of the stomach wall. As infiltration takes place around and beneath the glands they lose their integrity and consequently their function.

By whichever of the above plans development takes place the lymph-nodes sooner or later become invaded and enlarge. It is not possible clinically at the time of operation to differentiate these nodes from the enlargement due to ulcer whose infection drains into the nodes, whether the ulcer be primary, concomitant or due to breaking down of the cancer mass. After cancer cells gain the free peritoneum their spread is easily understood. The nature of the primary growth is valuable in general terms, the more acute medullary type producing hopeless invasion of remote regions; but in the slower forms, more or less scirrhus in type, the secondary growths do not always partake of the scirrhus nature of the parent tumor and may be rapid and extensive. Likewise, the size of the primary tumor should not influence us to feel too much assurance because it is small, for a very small and innocent-looking primary tumor may be the cause of fatal metastases, which may be present at the time radical surgery is undertaken and escape attention unless exhaustive measures be employed to disclose them.

In the stomach as elsewhere cancer tissue is subject to degenerative changes and consequently ulceration, hemorrhage and infection. But the point that needs most to be employed in our practice is that we must no longer look upon the positive signs of any concealed cancer as diagnostic, as was formerly the case, but as prognostic and very unfavorably at that. For instance, I was taught that the signs of uterine cancer were pain, hemorrhage, stench and cachexia. Surely they are, and worthless signs, too, that invariably or almost so mark the early doom of that patient. I heard the same great teacher subsequently report that he had operated upon more than two hundred cases of uterine cancer past the three-year limit and without exception all were buried. So will all others be, practically, who come with the symptoms given me by which to make a diagnosis. The man who effects cures in uterine cancer is he who never sees the four characteristic symptoms, but who on the slightest suspicion makes the most exhaustive study until he satisfies himself that cancer, incipient cancer, is present and acts without delay.

As in uterine cancer, so in gastric the appearance of symptoms which are the

result of changes of a secondary nature cannot be depended upon to give us information which will enable us to save the patient. More may be saved here than in cancer of the uterus perhaps, but such symptoms are not ideal, since they presuppose that the tumor has been growing to a considerable stage of advancement. Besides, they are accidental and therefore inconstant.

The only real symptom cancer has is pain. Other symptoms may develop as the tumor advances to the hopeless stage, and chief of these is the group indicated by the term cachexia. And pain is no more a symptom in cancer than it is in numerous other lesions, and much less constant. There is nothing in a cancer cell or a group of them to produce pain. Hence this lone symptom is only an incident in the development of cancer. It occurs if something else happens, either pressure upon a nerve, or ulceration and infection, or interference with the function of motility. It, therefore, often does not occur early in cancer in general, including that of the stomach, and may never occur.

The clinical and microscopical evidence amounts to little more, as a rule, than suspicions, and should, I think, be classed among the most uncertain diagnostic measures we employ. They tell us something, and this indeterminate thing may be interpreted in various ways, usually with about as specious argument on one side as the other.

X-rays likewise help, but it is probably not going too far to say that it helps least where we need it most, and it is scarcely possible for one to feel absolutely sure of a diagnosis from X-ray findings when there are many degrees of cancer and so many points of uncertainty in the interpretation.

We may as well be honest with ourselves and admit that the early diagnosis of cancer of the stomach is well nigh impossible. But the patient's welfare demands that we give him the best we can, because surgery for cancer of the stomach is undoubtedly offering a larger percentage of cures than it is for cancer of the uterus. What course can we pursue? Abandon all our evidence and say we do not know? I think not. We may safely do the same thing here that we do in suspected cancer of the breast, which has increased our cures from forty or fifty per cent. to one hundred per cent.—namely, operate before we can be sure that there is a cancer of the stomach; operate on justifiable suspicion. In my own work it has been far from possible to locate the cause of trouble in the stomach. The symptoms, the history, the physical and fluoroscopic findings, and the examination of gastric contents, may lead us to a certain point of uncertainty as to whether the lesion is surgical or medical; and this amounts to much since medicine has recently made such great strides. Let then the internist take charge and by therapeutic measures work out the case and decide whether surgery should be resorted to. If so, let the surgeon and the patient understand that no further loss of time is to be encouraged in trying to make certain, but let the abdomen be opened and the facts revealed, for if it is cancer of the stomach the revelation cannot come too soon. If this is to be classed as exploratory operation, then exploratory operation is useful as an interpretation of the uncertain signs and symptoms which have only been sufficient to indicate that the patient had a serious intra-abdominal lesion. Exploratory incision is preferable to post-mortem, which has heretofore been our favorite method of diagnosing gastric cancer.

DISCUSSION

Dr. Joseph C. Bloodgood, Baltimore, Md.—I do not believe Dr. Bryan was present to concur with my views in regard to the X-ray in gastric lesions that I expressed this morning. My statement was, "If you want to be sure of your diagnosis in gastric cancers or ulcers of the stomach, make it after you have seen the stomach."

In regard to the early diagnosis of cancer of the stomach, apparently there is no early diagnosis, as Dr. Bryan has brought out, of cancer of the stomach. I think he has made clear to you (and I only can repeat it) that there are, however, sufficient symptoms in relation to that portion of the abdomen which should excite suspicion. Now, I do not know how it is in his country, but I believe in most clinics the reason that we know so little about the early diagnosis of cancer is that we are rarely given the opportunity to make our investigations in this early period. It is due, first, to the fact that these early individuals suffer from whatever cause it is, but a good many of them do not consult physicians. They take medicine at home, and when they do consult physicians the tendency even today is to try treatment first, before making a thorough examination.

I feel quite certain that our knowledge would be very much greater if we had an opportunity to make a thorough examination of the cases of cancer in the beginning of the symptoms. Now the remarkable thing, in my own experience, is this, that up to the present time the cases in which we are making a thorough examination, very shortly after the beginning of the symptoms,—unfortunately for our own improvement in diagnosis,—do not prove to be cancer when we open the abdomen. I think that this can be explained very simply. If a patient has some obscure symptoms within the abdomen, and comes to you and you make a thorough examination, and you do not know what it is, and you explore, you do not find cancer of the stomach. You find ulcer, gallstones, or some intra-abdominal lesion that is not cancer. You call it an early case, because what you have found you have cured. But if you really take it late, it is not a curable case at all. The average duration of symptoms may have been a year or six months, but not finding cancer, but something that is curable, you speak of it as an early case.

It is quite possible that in some forms of cancer weeks or even days make a difference between operability and inoperability.

In other cases of which we have record up to 1910, only 19 per cent. were operable, of cancer of the stomach, that were cancer of the stomach at operation or autopsy. Nineteen of the group that had come under observation during 20 years were operable, and of that 10 per cent. were cured. Now, since 1910 almost 40 per cent. have been operable, and if we could say that the average duration of whatever they complained of up to 1910 was two years, we find the average duration since 1910 has developed to almost one year—14 or 16 months. But that is not sufficient. That simply demonstrates that we are getting cancer cases earlier, but not early enough to make a great impression by the number of cases cured.

As Dr. Bryan said, all cases of cancer of the stomach do not begin in ulcer. I saw an autopsy in Louisville the other day in a young woman, and in opening the stomach there were papillomata. Another case, for example, was cancer of the stomach in a man. He was taken sick on November 1. He suffered just as much in May, but was not operated upon until November 3, when he should have been operated upon on May 3.

If people suffering with something in the abdomen were immediately subjected to the most careful investigation it would lead to the opening of the abdomen just as we open an abscess, and it would be a matter of weeks, and not of months.

NEGLECTED APPENDICITIS*

By Jere Lawrence Crook, A.M., M.D., F.A.C.S.,
Jackson, Tenn.

No doubt many members of the Surgical Section who were present at the Dallas meeting will recall the very interesting series of papers and discussions on appendicitis. The most impressive fact brought out at that time was the greatly increased mortality rate due to delayed operations and the prolonged disabilities resulting therefrom when recovery occurs. Every surgeon, especially those operating in the smaller cities, has had so many of these delayed, neglected cases brought to him as a last resort, that he has doubtless wondered if it is possible to teach the people the dangers of delay. Not only does the desperate condition of the patient render the operation more difficult and hazardous, but even when the patient survives, his suffering is vastly aggravated, his convalescence greatly prolonged, his hospital expenses largely increased, and his loss of time indefinitely extended. We therefore have the best of reasons for using our utmost efforts to bring this important subject before the people.

It was with the idea and purpose of preventing these needless deaths and disabilities that I offered a resolution at the close of the discussion last year, that we devote a session of this meeting to the task of teaching the general practitioner and the public the danger of neglected appendicitis, and the vast importance of an early diagnosis and prompt operation. Therefore, when the Secretary invited me to present a paper at this time on neglected appendicitis I construed the invitation as affording me an opportunity for elaborating somewhat on the idea embraced in my resolution.

Every case of appendicitis allowed to go on to suppuration with its high mortality rate is an indictment of the physician first called or of the patient if he refuses operation.

The lamented Dr. Murphy in his "Clinics" on April 7, 1915, spoke so clearly,

*Read in Section on Surgery, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga Nov. 13-16, 1916.

so forcibly, and so logically on this subject that I shall quote him at some length. It is almost like a voice from the beyond, as the words were taken down exactly as he spoke them and published in the June, 1915, edition of his "Clinics":

"Just recently a critic took a Chicago surgeon to task in the columns of a medical journal because the latter had published a colored picture of a gangrenous appendix in connection with a practical talk on its proper treatment. The critic intimated that appendicitis was ancient history. It is ancient history; but does that statement mean that all practitioners are masters of the subject, or that the disease is efficiently handled at the present time?

"In looking up recently for the Year-book of Surgery the hospital statistics on the results of operations for appendicitis, what mortality rate do you suppose I found? . . . **The average hospital mortality rate is just a little over 10 per cent.!** If that is not a solar plexus blow to our conceit! These are not surgeons' statistics: they are the statistics of hospital managements, figures taken from the printed annual reports of hospitals which are progressive enough to publish reports. They include appendicitis cases of all classes brought to the hospital for operative treatment.

"Is it time to stop talking about appendicitis? No! It is just the time to **begin** talking about appendicitis, and talking most seriously and emphatically about it. When you know that in our best hospitals better than 98 per cent. of all the **acute** appendicitis cases, including those with abscess and peritonitis, are saved, and when you know that scarcely one out of a hundred cases of acute appendicitis operated upon during the first twenty-four hours of the attack is lost, think what the results must be in the other hospitals to make the general average so appalling! There is no palliative excuse for a mortality of 10 per cent. in appendicitis. The rate is simply shocking. Just think! Even the cases of appendicitis with perforation into the free peritoneal cavity have now but a very slight mortality when operated upon in time by experienced hands; and still the appalling combined rate is 10 per cent., including the chronic and interval cases, which should show practically no mortality at all,—as well as the acute cases. It is shocking! It is frightful! These patients did not die because of the operation,—do not misunderstand me,—they died in spite of it. They died in the hospital under a surgeon's management, but they died not so much because of any fault in technic as because of the fact that they did not reach the hospital in time for successful operation. **Procrastination was the cause of death**—the almost criminal cause. The initial symptoms of appendicitis are clean-cut and almost unmistakable. The later symptoms are equivocal and not to be relied upon. The mode of onset of an attack of appendicitis is no clue to its probable course or complications. We can never tell in a given case what the next day may bring. **Therefore, operate today!** By operation we take the course of the disease into our own hands. By not operating we leave the case in the hands of a blind and often terribly cruel fate."

The family physician must bear this fearful responsibility for delay, except when the patient refuses operation after the case has been fairly placed before him. The family physician, if he be thoroughly imbued with the gravity of the situation, and thoroughly conversant with the symptoms of the disease, can, in almost every instance, influence the patient in favor of an early operation by a competent surgeon. It is no answer to this argument to state that a competent surgean can save nearly all of his cases regardless of the time of operation, duration of the disease, or condition of the patient. Many men go through battle without being wounded, but that does not lessen the danger of the individual soldier. How can a conscientious physician impose upon his patient the tremendously increased risk of delayed operation when he realizes that the hazard to the patient is ten times as great? This statement presupposes that the family physician is in touch with a reputable surgeon who possesses a surgical conscience and technical skill.

But some may claim that many cases of appendicitis recover without operation. True, many cases apparently recover without operation, but experience proves that one attack always predisposes to other attacks, any one of which may prove fatal, for when an appendix has once been acutely diseased it never becomes a normal organ again. Forever afterward its owner carries in his abdomen a concealed bomb, liable to explode at the most inconvenient time with results most disastrous to himself. Therefore, should the patient refuse operation and be fortunate enough to survive the attack it becomes the manifest duty of the physician to insist upon an interval operation, because of its favorable mortality risk and furthermore because of the probability of other attacks whose tendency is to become more severe.

I am glad to say that the best informed physicians all over the country are in full sympathy with the efforts of the surgeons to reduce the mortality rate in this universal disease.

Dr. Norman Bridges, of Los Angeles, Cal., a well known internist, in an address on this subject recently, spoke as follows:

"Now we have the rule, which is widely accepted, that immediately after making a diagnosis of appendicitis the operation should be done if the

surgeon is competent. But this rule is not so universally accepted as it ought to be. There are many reasons for this: One is the fact, known to all doctors and lay people, that a large proportion of cases, with rest and good nursing, recover or appear to recover; another is the dread of a surgical operation in one's family even when it is a physician's family; another is the belief, somewhat prevalent among lay people, that surgeons do many appendix operations that are unnecessary. So many cases are left to recover or to die without surgical aid, or with it too late.

"Of course, any number of people may recover from this disease without operation, but no human being can tell which patient is going to have a perforation and then an abscess or general peritonitis. Nor is there now any ground for the hope that means will be discovered whereby we can know without opening the abdomen the cases that, left to themselves, will, and those that will not, pass on to perforation and pus. The reasons for this are the differing physiologic equations of the patient, their varying conditions of health, their differing powers of resistance to various micro-organisms, the differing physical and chemical causes in the appendix itself, and the anatomic variations of the organs in different patients. These uncertainties will make it forever impossible to settle, without operation, this most vital question. I know that men have believed and argued that they are able to make the distinction, and learned medical societies have wrangled over this question almost interminably, but there is only one safe rule—that is, to operate promptly when a diagnosis is made. With a modern surgeon and the surgical facilities of a modern hospital there should be no difficulty, and by this course the danger to life will be minimized.

. . . . . .

"We internists have almost as large a responsibility as the surgeons themselves. We ought not only to seek to have every appendicitis case operated upon early, but we ought, for numerous other conditions and mysteries in the abdomen, to insist upon exploratory laparotomy when it can be done by a surgeon of large experience."

These words harmonize perfectly with the statement of Dr. Murphy previously quoted and were spoken in his clinic. They emphasize the importance of perfect agreement between the physician and the surgeon as to the nature and treatment of this disease in order that we may accomplish that which we all most desire,—the salvation of more lives.

The physician is just as anxious as the surgeon to reduce mortality from every cause, and it is the duty of the surgeons to convince them that appendicitis is a surgical disease demanding prompt operation.

A mortality of 10 per cent. is the mortality of delay, and it is more than nine times too high. Think of what this means when applied to the thousands of cases the world over! It means nine thousand unnecessary deaths in every one hundred thousand cases! Preventive medicine surely needs no greater incentive than this to push a campaign of education in the medical societies and before the people to teach them the necessity of prompt operation by competent surgeons, which is the only factor necessary to reduce the mortality from 10 per cent. to less than 1 per cent.

No one will deny that the chief factor in reducing the mortality rate in tuberculosis is the educational campaign which has been conducted for several years by the medical profession, ably assisted by press, pulpit and philanthropists the world over. An outgrowth of the campaign has been the organization of county, state, district and national societies for the study and prevention of tuberculosis, which have, by publicity in the press, by public lectures and by personal efforts, accomplished a marvelous work of life conservation in this one field. A sucess so pronounced in staying the ravages of tuberculosis, by teaching the people the cause, nature, prevention and cure, laying especial emphasis upon early diagnosis and prompt treatment, can easily be duplicated in appendicitis. Furthermore, in the latter case the results will be far more certain and gratifying, because modern surgery has absolutely conquered appendicitis and demonstrates its mastery in practically every case where it is promptly invoked. The campaign of education as to the cause, nature and treatment of appendicitis, I maintain, therefore, is practical, feasible and desirable. It should begin with the medical profession and every medical meeting should make its publicity propaganda a leading feature, with every paper on the subject read and discussed in joint sessions of both physicians and surgeons. It should be enthusiastically supported and promoted by the press and philanthropic organizations everywhere. I am confident that the task of teaching the people that this disease is a surgical one, demanding prompt operation, would be far easier than convincing them that pure air and good food cure consumption.

By the time that the people have learned this lesson we may expect to have the diagnosis and treatment so standardized in

the minds of both internists and operators, that the so-called medical treatment of appendicitis will be but a doleful memory and neglected cases will be only those who refuse to heed the advice of their physicians and who have closed their eyes and ears to facts set forth by the campaign to teach the people the nature and treatment of this world-wide disease.

DISCUSSION

Dr. C. N. Cowden, Nashville, Tenn.—The question of appendicitis is like the poor: we have it with us always. Many of us don't realize that we are not progressing very much in the treatment of these conditions. The question is one that should have been discussed in the Section on Medicine entirely, because it is the internal medicine man who is responsible for the high mortality rate of our statistics. There is no question about it at all. There is no surgeon in the United States who does not recognize the gravity of time in these operations. I looked up the mortality rate of the St. Thomas Hospital in Nashville and was surprised to find that we have more deaths from appendicitis there than from any other disease that we deal with. It isn't hard to make the diagnosis. As a rule we can. The trouble that I have been having with it is to get the internist to make up his mind that this is what the patient has. He is afraid that he will make a mistake in his diagnosis and will not make up his decision until it is too late. We have to continue the discussion—not with the surgeons, but with the internists.

I make a motion here: that we discuss this thing before the Medical Section at Memphis next year. Another thing, in dealing with these badly neglected cases of appendicitis, we should do an enterostomy by slipping a catheter into the lumen of the bowel. Don't wait to see if you have an obstruction or paresis, if you have a large amount of gaseous distention. We have this condition in many instances. You would be surprised at the amount of material you will get from the inside of the intestinal tract and the toxines from this pushes the patient over the brink. If you relieve him of the toxines inside the gut, you relieve him of a great deal and Nature has a chance to rally under the load. You are draining both cavities, abdominal and intestinal, by this method. I have used it in five cases in the last twelve months with perfect success, and I am satisfied that every one recovered because of this simple little measure. The fight on this subject is not with the surgeons; it is with the internists who see the cases first.

Dr. C. E. Hutchinson, Pensacola, Fla.—Dr. Crook quoted from Dr. Murphy. He said once "the trail of appendicitis had been so clearly blazed that a man must be a genius or a hopeless egotist to depart therefrom." I am one of those men who believe that when a medical convention comes together and appendicitis is not discussed or when "neglected appendix" I do not believe that we will ever have the last word on this subject and we in small towns with a great bulk of uneducated populace have this continual bugbear to deal with. We do not get the case until it is from five to ten days old, and that certainly presents to us one of the most difficult problems of our lives. I was delighted to hear the discussion.

Dr. W. S. Slicer, Roanoke, Va.—There is just one point I wish to emphasize in regard to high mortality in appendicitis and I think this point well worth mentioning.

I have associated with me in our little hospital two men and we three are doing general practice as well as surgery.

In looking up our records of motality in appendicitis cases we found that in the cases we ran across in our general practice that we only had a mortality of one per cent. against a mortality of nine per cent. in cases who would come to us of their own free will and accord and who were referred by general practitioners.

The men in general practice doing surgery recognize and know the importance of early operations in these cases. This shows the force of what the doctor says in regard to this question's being discussed freely before the Medical Section.

The facts are these: men doing some surgery and general practice will lose one per cent. of their cases whereas of the cases that are referred and who go to the hospital of their own free will and accord there will be a mortality of from five to nine per cent.

Dr. Jos. A. Danna, New Orleans, La.—I am glad to hear this subject brought up here today. When the Association met in New Orleans some nine years ago, I wrote a paper which was put down in the Medical Section entitled "The Medical Treatment of Appendicitis from the Viewpoint of the Surgeon," in which were stressed the very points that the doctor speaks of.

I had hesitated about rising just now until I had heard the essayist and the doctor from Nashville candidly state what the mortality in their own experience was, and also in the statistics. For a great number of years I have had the privilege of seeing a large number of these cases at the New Orleans Charity Hospital, and the usual history of those cases is that the condition was first seen by the physician and treated very lightly, as an indigestion, as a colic, or as anything you please; or the attack was so light that the patient did not consult his physician. After two or three days he got up and started eating and then began having a little more pain, when he paid a second visit to the doctor, who said: "You are not better yet?" He orders a purgative because the patient stated his bowels had not moved since the attack, and because it does not work he gets actively to work to move those bowels, having apparently no other object in view.

Of course he is just trying to break down the barriers that Nature has put there. Those cases come to us moribund as a result of the rupture of an abscess that was probably localized, and when we get them are about ready to die, and if we operated upon them it was not that we expected the patient to recover, but to clear our consciences and feel that we have done everything we could for the patient and that he had

died with the help of whatever assistance we could give him.

Dr. Mary Freeman, Perrine, Fla.—I would like to ask for information on the diagnosis of a case that came to me during the latter part of July. She had been sick for five days, part of the time in pain and part of the time not in very much pain, but at the time she came to me she was in very great pain. The right tube was distended until it was about the size of three fingers, tight as a drum. You could feel it on the outside and on the inside. A temperature of 102° and a pulse of 100. I put her to bed with an ice pack on the abdomen, kept her there until the fever was gone and this swelling had subsided, applied iodin on the outside and ichthyol tampons on the inside, and then I sent her to the hospital for operation. The appendix had adhered to the tube. Appendix had burst and a little chunk of fecal matter about the size of a bean was found in the abdominal cavity. She did have a pus tube, but it was discharging through the uterus,a very foul discharge. Patient recovered after operation.

I had suspected appendicitis when she first came in, but finding that tube I had let the appendicitis idea go.

Dr. Addison Brenizer, Charlotte, N. C.—I think the man doing surgery is often in a very embarrassing position as to the appendicitis. I think you have a pretty brilliant opportunity to look over cases and sift out your appendiceal cases.

A man gave me a history of a rather indefinite trouble on his right side, and at the time I examined him I couldn't find absolutely anything wrong with him, and he didn't want an operation unless it was necessary. He came back not two weeks later with a ruptured appendix, disgusted with me, and went to another man.

Another case, a woman with temperature of 103°, colic and pain on the right side, came to me on a stretcher. It looked to me like a drainage case of appendicitis and I told her she would be in the hospital about three weeeks. In going in I found a little fecal matter and told her she would be in the hospital about ten days. Now, this woman has threatened a suit against me, although she was subsiding from the attack.

Now, you don't like to have those cases slip up on you and develop pus and let the other man laud it over you.

The diagnosis is not always easy, and I have been embarrassed that way several times.

Dr. Crook (closing).—One other thing Dr. Murphy said in regard to the expectant treatment of appendicitis. He said: "The expectant treatment? Expectant what? Expecting death? You talk about expectant treatment of appendicitis to me? It is just like putting a red flag in front of El Toro. I haven't sufficient language to express my opinion of such a thing. Tre Italian language is far too mild; I do not know enough German, so I will stop there."

Speaking of the surgeon's doing general practice, I do some also, and one of the reasons I do it is that I may be able to save the lives of some people that are entrusted to my care. When I find a case of appendicitis in my own practice I know that case is going to be operated upon early. If it is referred to me by some one else, in the majority of cases I do not get it until the appendix has ruptured and the patient's condition is critical. In those cases he is much more apt to die and it is this delay in getting the patient to the surgeon that is responsible for the mortality. The remedy for this is to get the subject before the people that it ought to be before, and thus reduce this frightful mortality; and to do this we have to keep on talking about it whenever a medical association meets. If I have succeeded in getting that clear before this meeting, so that we may have this subject discussed before the general session next year, I shall feel that my efforts have not been in vain.

THE TREATMENT OF THE MORE COMMON FRACTURES*

By Lucius E. Burch, M. D., F. A. C. S.,
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INTRODUCTION

This subject is one in which the general practitioner and surgeon are equally interested. The average practitioner treats the fractures that occur among his clientele. The surgeon has referred to him the difficult fractures that are first seen by the practitioner, or he may, on account of his local reputation, be called in first-hand by the family.

The X-ray has cleared up the uncertain pathology that so long existed concerning many fractures, and great improvement in treatment has been the consequence. No man, however skillful or great his experience may be, always obtains a good result following a fracture. The profession has made a great stride forward along this line, but perfection is still a dream of the future.

I will not attempt in this paper to bring out anything new, for I have nothing new or original to offer. I will simply present the results of my own experience, observation and study in the treatment of the more common fractures.

A surgeon or practitioner taking charge of a fracture case should be careful about promising good results. It is my own

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plan to say that I will promise nothing, except to do my best. I am careful to make this statement in the presence of one or more reliable witnesses, and frequently I reduce it to writing and have the patient, again in the presence of witnesses, sign it.

In the past the profession has devoted too much attention to ingenious splints and mechanical appliances and too little to the proper reduction of fractures. In my opinion, proper reduction constitutes 90 per cent. of the treatment, the splint or mechanical device only 10 per cent.

The X-ray should invariably be used after the reduction of the fracture, and, if time and circumstances permit, before reduction is attempted. It is not necessary to have a perfect alignment of the fragments to obtain a good functional result. This is a point that many of the profession fail to realize in the interpretation of an X-ray plate.

I cannot emphasize too strongly the danger of too tight bandaging. A variable amount of swelling follows the reduction of all fractures, and it is therefore essential during the first twenty-four hours after the application of the splints to observe frequently the part, in order to avoid constriction. It is a fairly constant and reliable rule that if a fracture is properly reduced and the splint is not too tight, little, if any, pain is present. Severe pain, therefore, signifies improper reduction or too much constriction. It is well to remember that ischemic paralysis is the result of too great pressure during the first twenty-four hours.

COLLES' FRACTURE

One of the most common fractures is the Colles or "silver fork." It is also one that is frequently followed by a poor result and perhaps a suit for malpractice.

It is impossible, in a paper of this kind, to dwell upon the etiology, pathology and symptoms.

The history of the accident and the physical signs in the majority of cases make a diagnosis easy, and with the aid of the X-ray all doubt is eliminated. The X-ray picture should show both an anterior and lateral view of the fracture.

In the treatment of a Colles fracture, an anesthetic should invariably be used; otherwise proper reduction is impossible. In the great majority of Colles fractures reduction is easy, and after it is accomplished it has a tendency to remain in place. It has been my good fortune to meet with only one case of Colles fracture that could not be reduced. This one case was finally reduced with difficulty by an open operation, but after it was once accomplished the fragments showed no tendency to become displaced.

It is well to caution the patient before reducing the fracture that a certain amount of broadening of the wrist is likely to persist. If the patient is aged, limitation of motion of the wrist is possible, and this should be fully explained.

After the patient is completely anesthetized, the right hand of the surgeon should grasp the hand of the affected side, the first step being extension of wrist on the forearm. This motion follows the direction of force at the time of the receipt of the injury, and has a tendency to unlock the fragments. Extension is immediately followed by strong traction and flexion. The left hand of the surgeon should grasp the forearm at the seat of fracture, and as traction and flexion are being carried out, pressure should be made and the fragments forced back into place. After reduction the wrist should be flexed and extended gently for the purpose of ascertaining the stability of the reduction. If proper reduction has taken place, extension and flexion will not dislodge the fragments from their normal position.

Murphy and others assert that after a Colles fracture is once reduced that a splint is unnecessary, and that if the wrist is kept in a sling for a few weeks a good result will ensue. I have followed this teaching in a number of cases with perfect success. It is my experience and observation, however, that the patient will have a smoother and easier recovery if the injured member is splinted. I have no particular splint to recommend, as I believe one is as good as the other.

I do want to emphasize, however, the necessity of having the patient move the fingers and the thumb daily from the first. Passive motion of the wrist should be started at the end of a week, active motion at the end of the second week, and pronation and supination at the end of the third week. In the aged, at the end of a week,

massage should be used daily. At the end of three weeks the splints should be discarded and the wrist placed in a sling for a week or ten days, and then retention of any kind is omitted.

FRACTURES OF THE ELBOW

Fractures into and around the elbow are common, and if great care is not exercised in the treatment, a crippled or almost useless arm is the result. Scudder has laid down a rule that should invariably be followed. "Every elbow injury, no matter how trivial, should be examined under anesthesia." I should like to add to this that every elbow injury should be X-rayed, and in children it is well to X-ray the arm of the opposite side for comparison. I once interpreted in a child a dislocation of the olecranon from the X-ray picture, and then, to my chagrin, a picture of the opposite elbow compared with the injured one showed no fracture or dislocation. I have also had the X-ray show a normal condition at the elbow, but when examined under an anesthetic a fracture of the internal condyle was easily made out.

Fractures of the internal condyle, internal epicondyle, the external condyle and "T" fractures into the joint are best treated in the acutely flexed position. Fractures treated by this method will usually terminate with a good functional result. The patient is anesthetized and the condyles of the humerus are grasped by the finger and thumb of one hand, with the other hand a finger is placed in the bend of the elbow. The assistant then makes traction on the forearm and slowly flexes it to the acute position. While the assistant carries out these movements, lateral pressure and traction are used on the loose fragments of the humerus.

The acutely flexed position is easily maintained by a strip of adhesive plaster passing about the arm and forearm, and it is then supported by a cotton swathe passed twice around the body. This dressing is not only very comfortable to the patient, but the surgeon also has an opportunity to notice the degree of swelling at the point of injury, and if obstruction to the circulation should occur it may easily be corrected before serious damage is done.

Massage in children should be started at the end of the first week, passive motion of the elbow at the end of the second week, taking care not to extend the forearm on the arm beyond a right angle, and active motion at the end of the third week. At the end of the third week gentle attempts should be instituted to extend the forearm, and this should be daily increased until the joint has regained its full degree of freedom. Carrying of weights and dumb bell exercise will materially assist the joint in regaining its normal motion. In adults and aged patients, massage, passive and active motion, exercise with or without weights, are deferred from one to two weeks beyond the time that they are employed with children.

POTT'S FRACTURE

Pott's fracture is a common one, and if not properly reduced and maintained a crippled and deformed member is the result. It is often associated with an anterior dislocation of the tibia. This dislocation is easily made out by the prominence of the anterior margin of the articular surface of the tibia; the foot seems shorter than the one of the opposite side; and it is impossible to bring the foot to a right angle with the leg.

The first step in the treatment, after the patient is thoroughly under the anesthetic, is to reduce the dislocation. First increase the deformity by extending the foot, then make traction and flex the foot. If the maneuver is successful, there will be no difficulty in flexing the foot to an acute angle on the leg. The fracture is reduced on the same principle: increase the eversion and then make traction and invert the foot.

Splints should then be applied which will hold the foot inverted and form a right or even an acute angle with the leg. The object of the inversion is to restore the interosseous ligament, for if this fails to unite the foot will evert when weight is put upon it. A proper splint is easily procured. The Dupuytren is very popular, easily made and applied and is quite efficient. Personally, I prefer the Stimson method, which consists of a posterior plaster-of-Paris splint, extending from the toes to the knee, and another lateral plaster-of-Paris splint, beginning at external malleolus, passing over the dorsum of the foot, then under the sole and up the external

aspect of leg as high as the posterior splint. These splints, after hardening, are kept in place by adhesives or by straps; and thus they may be easily tightened or loosened as the occasion demands.

Massage is daily applied to the exposed parts of the leg. The patient may be allowed to move about on crutches at the end of the first week. Of course no weight should be placed upon the injured limb. At the end of the second week the dressings should be daily removed and massage and passive motion of the ankle joint begun only in an artero-posterior direction. At the end of the fifth week lateral passive motion may be started, and at the end of two months some weight may be put upon the part.

FRACTURES OF THE FEMUR

Fractures of the femur are looked upon by the majority of the profession as a difficult problem. These fractures are exceptional compared with those in other regions, in that the splint is 90 per cent. in effecting not only a good result, but a comfortable convalescence. I desire to call to your attention and highly to recommend to you the Hodgen splint, as modified by Brown. The advantage of this splint was presented by Drs. McCabe and Gallagher, of Nashville, several years ago in a paper before the Southern Medical Association. The surgical profession of Nashville has given it a thorough trial, and the results have been eminently satisfactory. The splint is simple, can be made by any blacksmith in a very short time, and is easily applied. It has the following advantages: No anesthetic is necessary, the patient is kept clean without difficulty and the limb is under constant inspection, for the reason that no bandages are used. The patient can sit up, which is a point of great importance in the aged, and convalescence during the four to eight weeks' confinement is rendered free of pain and discomfort.

CONCLUSION

In conclusion I desire to call attention to the following points in the treatment of fractures:

(1) Always compare the injured with the uninjured member.

(2) Check up your diagnosis with X-ray pictures taken antero-posteriorly and laterally. In young children have an X-ray made of the uninjured member for the purpose of comparison.

(3) Remember that splints are merely for the purpose of immobilization and not for reduction. (The Hodgen splint is an exception to this rule.)

(4) Use an anesthetic when reducing fractures.

(5) Avoid tight bandages.

(6) The majority of the common fractures when properly reduced give very little pain and are easily kept in position by simple splints.

(7) Massage and passive motion should be started at an early date.

Editor's Note: This is the third of six papers on Fractures read before the Railway Surgeons. The first one appeared in the January issue, the second in February. The other three, with discussions of all, will appear in future issues.

VALUE OF GENU-PECTORAL POSITION FOR BASTEDO'S SIGN IN CHRONIC APPENDICITIS*

By J. D. S. Davis, M. D.,
Birmingham, Ala.

Bastedo described his test for chronic appendicitis in 1911 which consists in the inflation of the colon with air through a rectal tube. The tube is introduced 10 to 12 inches through the rectum and the colon is inflated by means of an atomizer bulb. After inflation of the colon pressure at or near McBurney's point produces tenderness and pain if the appendix is inflamed.

Bastedo, Hertz, Dreyer, Slawinski and Bischoff all say colon inflation is of great value as a diagnostic sign of chronic appendicitis. Rost claims the sign is positive in pathological condition of the colon and that pain is produced at the appendix only when changes in the mesenteriolum is such as to bring the appendix into abnormal relation to the cecum.

Bischoff has found the test positive when the appendix alone was found diseased and the mesenteriolum normal. He

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says his patients give no sign of pain or discomfort from colon inflation after operation.

Goodman and Lueders claim that the test is not pathognomonic of chronic appendicitis and that there is no constancy in the results obtained with it.

I have had the experience of Goodman and Lueders and would have given up the practice but for the knowledge I had gained in throwing fluids in colon. When a patient is on the back the sigmoid is flexed in such a manner that fluid cannot be carried higher than the sigmoid. If the patient is placed in the knee chest position and a rectal tube introduced into the rectum, the sigmoid at once becomes inflated with air, straightens out, and fluid may be made to pass through the sigmoid up into the colon. So I came to the conclusion that my failures were due to my not getting air to the head of the colon. About this time I had a patient who had a digestive disturbance in whom I suspected a chronically inflamed appendix. I had inflated the rectum by the Bastedo method and failed to get pain on pressure over the cecum. I placed the patient in the knee chest position and inflated the colon, which gave her acute pain at McBurney's point. When the patient was turned on her back, pressure over the appendix caused severe pain. Since this experience I have been in the habit of placing all my suspected chronic cases of appendicitis, who do not give pain on pressure before colon inflation, in the knee chest position for air distention with uniform results. In every case where pain was so induced an inflamed appendix was found at operation.

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BASAL CELLED CANCERS OF THE SKIN*

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The old classifications of cancer of the skin were extremely unsatisfactory, for they were founded upon clinical rather than pathological observations. An excellent discussion of them may be found in Unna's book[1], and I allude to them in my own monograph upon "Skin Cancer[2]." In 1900, Krompecher[3] first published an article in which he recognized that there was a type of carcinoma that arose from the basal cells of the skin. In 1903, he amplified this article with an elaborate monograph entitled "Der Basalzellenkrebs[4]." Bloodgood[5] at once adopted his views, and an excellent article from his pen appeared in 1904. Thanks largely to the work of the latter author, it is now becoming generally recognized that there are two very important types of cutaneous cancer, the basal celled and the prickle celled, and that they run totally different courses, and hence demand totally different treatments[6].

However, neither the text-books upon pathology, surgery or dermatology, with the exceptions of the recent books by Sutton[7] and me[8], take proper cognizance of this fact; and as a result there still remains a very considerable amount of confusion, not only in the minds of students, but even among surgeons and dermatologists. That it is extremely important to recognize this difference is due to the one fact that basal celled tumors practically never metastasize, and that prickly celled tumors do metastasize in over fifty per cent. of all cases[9]. This means that in some instances neighboring lymph nodes are unnecessarily removed; that in a much larger per cent. of cases they are not removed when they should be; and that death not infrequently results, a death that could easily have been avoided.

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It should always be remembered that these basal celled tumors do not alone involve the skin; they may be found upon the mucous surfaces, and perhaps may even spring from various glandular structures, although this question has not as yet been definitely settled. However, it is clearly impossible to discuss all phases of the question in one short paper, so I shall confine myself to a discussion of those originating from the skin.

Clinically the growth usually arise from either a diseased or a congenitally malformed area, notwithstanding Heimann's[12] recently expressed views to the contrary. The patient's attention is usually attracted to the diseased area by noting some very slight disturbance in sensation, although never actual pain. Then it is noted that there is some slight infiltration present, and that a scab is formed on the surface. When this is removed or drops off a minute oozing area is exposed, that may or may not bleed easily. Again a crust forms, and when the ulcer beneath is again exposed it is seen to be larger. Very careful examination at this time may reveal one or two minute pearly nodules at the edges, the so-called "cancer pearls." According to the later course one of several types may be assumed: the lesion may continue flat and superficial; it may form a distinct nodule; there may be a rolled edge with a crater in the center; the lesion may simply simulate a depressed scar with a considerable amount of induration; the center may heal with the production of scar tissue and the formation of nodules at the periphery; morphoea may be simulated[11]; a fungous growth sometimes results if the tissues are very resistant to the downgrowth of the cancer cells; or rarely a deep ulcer results that may assume a very malignant course.

All of us realize how large and how destructive these lesions not infrequently become, and many of us know how common they are. The figures of the American Dermatological Association[12] prove that not far from two per cent. of all dermatoses demanding treatment are of a cancerous nature.

Even at the present time there is some discussion as to the histogenesis of the basal celled neoplasms. In a paper read before the last meeting of the Section on Dermatology of the American Medical Association, Heidingsfeld[13] contended that all or practically all of these lesions sprang from either the hair follicles or the cutaneous glands. However, the observations of Krompecher, as well as of Sutton[14] and me, should have settled this question most definitely. It is, of course, to be admitted that many tumors undoubtedly do arise from the hair follicles, and that some do from the glands; but it has been clearly proven from the study of serial sections that the basal cells of the rete are responsible for many, and probably for most, of these growths.

Petersen has shown that these neoplasms may spring from multiple foci of cells, and I have been fortunate enough to confirm this observation. From a clinical standpoint this fact is extremely important, for it may explain many of the recurrences that occur after removal.

Microscopically the tumor mass may be seen to consist of very numerous small oblong or oval cells that stain intensely with the basic dyes. Under no circumstances are epithelial whorls or pearls ever present, although there may be areas of snared off keratin containing tissue from the horny layer. As the disease progresses the histopathological picture changes, just as does the clinical course. Various shaped acini are formed; central degeneration usually occurs in some of the masses; and at times the cells invade the tissues in very much the way that a scirrhous carcinoma does. For a further discussion of the pathology the works of Krompecher, Bloodgood and the author may be consulted.

One very curious fact about these growths is their usual lack of clinical virulence. Microscopically they possess all of the attributes of malignancy, and yet they grow but slowly and do not invade the glands. This is particularly strange when we consider that the basal cells are not nearly so highly developed as are the prickle cells, and that we are always accustomed to think of neoplasms consisting of less highly differentiated cells as being much more malignant than those composed of highly differentiated cells. Another point that has not as yet been explained is that the melanotic carcinomata, of which Gilchrist[15] and others[16] have reported examples, are derived from these same cells and are excessively malignant.

As I have pointed out in a recent article[17], basal celled cancers of the skin must be differentiated from either primary or tertiary syphilis, tuberculosis, blastomycosis, simple inflammations, granuloma pyogenicum, morphoea, depressed scars, subcutaneous nodules, precancerous conditions and vegetating dermatitis. A basal celled growth must also be told from a prickle celled growth. As a general rule the diagnosis from non-malignant conditions can be made from the clinical examination and history. The most important points to notice are the slow growth, the development from a pre-existing pathological condition of the skin, the superficial ulceration, the induration and the rolled edge with pearly nodules.

It is frequently extremely diffcult to differentiate a basal from a prickle celled cancer. If the lesion be very small and of very short duration this may not be important, although I am by no means convinced of this point, feeling that metastases may take place at a very early date in some cases. In the later cases the location of the growth and the development are cardinal points, for the basal celled neoplasms but rarely appear upon the limbs, while they are the much commoner type around the center of the face. Then, too, a basal celled growth is usually of much smaller growth than is a prickle celled one. In many cases, however, it is essential to remove a bit of tissue for diagnosis, and this should aways be done with the cautery rather than with the scalpel, as there is certainly less danger of dissemination of the cells. The following study of one hundred and seventy-eight cases of basal celled cancer is based upon twenty-eight cases in my own practice, and one hundred and fifty cases which were studied in the Surgical Pathology department of the Johns Hopkins Hospital by Dr. Bloodgood. to whom I am mch indebted for the privilege of reporting them. While there have been specimens of many more cases sent to his laboratory, the cases that have been selected are the ones that have been well worked up, so as to give some information of value. All of the cases were chosen absolutely without an eye to the permanent result. Thanks to the follow-up system that Dr. Bloodgood has inaugurated with such success, it is possible to say what the result was in the vast majority of all cases, a most important fact if one wishes to know what results are being obtained from treatment, no matter what its character.

In this series of one hundred and seventy-eight cases, one hundred and ten were males and sixty-eight were females. There were but four Negroes, all of the other cases occurring in the white race. The scarcity of basal celled growths in the Nego cannot be explained by the paucity of material: from much personal observation of this race I am convinced that the true explanation is that the Negro does not suffer from senile keratoses, and this one fact explains the difference.

In the second decade of life there was one case, in the third decade two, in the in the sixth forty-eight, in the seventh twenty-eight, in the eighth eighteen, in the ninth five, and in ten instances the age was unstated. In all instances the attempt was made to determine at what age the malignancy developed, rather than the age at which the patient came under observation.

The vast majority of all cases originated from some definite pathological condition. In seventy cases senile keratoses were the starting point, "pimples" were alleged to be the cause in twenty-one instances, while scars and subcutaneous nodules were each responsible for eighteen cases. In eight instances malignancy developed from wart-like growths, while eczema and wens were the starting points in two each. Four lesions developed in congenital moles, while one originated from a patch of lupus.

The location of the tumors was as follows: forehead ten, right cheek sixteen, left cheek twenty-eight; right ear five; left ear six; chin four; scalp four; neck five; nose forty-three; external canthus right eye six; internal canthus right eye seven; external canthus left eye two; interan canthus left eye nine; right temple two; left temple seven; naso-labial fold six; face two; shouders three; axilla one; back two; finger one; hand one; upper arm two; ankle one; lower leg four and thigh one.

As regards the liability of these tumors to metastasize to the neighboring

glands both Bloodgood and I have consistently taught that this never occurs. However, that metastases may very rarely occur is proven from a study in these cases, for in four instances the glands were found to be invaded. One of the most remarkable instances was where a basal celled growth of the hand gave rise to prickle celled metastases in the axillary glands. In two of the Hopkins cases, pathological numbers 8515 and 15248 it was noted that the glands were involved. The first case was in a women of sixty who had had a growth upon her nose for three years. The glands of the neck showed cancerous involvement. The second case was in a women of forty-eight who had suffered from a growth upon the the skin of her right axilla for four years. Here, too, the axillary glands were definitely involved. In a recent case of my own a woman had suffered from a basal celled growth upon her forehead for seven years. Under heavy radiation the growth healed, but about six months later an enlarged nodule appeared in the neck. It was excised under cocaine, and was definitely not connected with the skin but was apparently one of the chain of glands. Microscopically it showed basal celled cancer, but no vestige of gandular tissue could be demonstrated under the microscope. It would seem certain then that metastases can occasionally occur, but that they are extremely rare. Krompecher also reports that in his series of cases there were a number of metastases.

As regards previous treatment it was found that nineteen patients had been treated by caustics, sixteen by X-ray, eight by excision, five by the curette and caustic method, three by radium and two by fulguration. These figures by no means represent the true number of cases which had previously undergone in sufficient treatment, for in many instances the history was absolutely silent upon this point, and in the later cases where emphasis was laid upon determining previous treatment it was found that a high percentage of all cases had undergone considerable previous treatment, usually with caustics.

The following figures as to the permanent results are derived entirely from the cases that had been surgically treated. Too few methods have been followed for any length of time to make reports on them of any value. Sixty-four patients who had undergone operations have been followed for more than three years. There are two cases where there is some doubt as to whether or not recurrence took place, although it is probable that such was the case. The results are as follows: four patients have been well for three years, thirteen have been well for four years, and thirty-nine have been cured for five or more years. In seven instances it was definitely determined that recurrence took place, three years being the average time when it was noted. A further study of the recurrent cases shows that but three of the lesions were less than one inch in diameter, and that two of these had been present for twenty years. Of these small lesions one was upon the ear, one at the inner canthus and one in the naso-facial fold. Two of the lesions were extensive growths of the cheeks that had been present for many years and had invaded bone. One was an extensive growth of the shoulder, while the last was at the inner canthus. In other words all four were almost hopeless cases when operated upon. The percentage of cures in all cases that underwent operation was almost eighty-six, while if we exclude the four very severe cases and one of the doubtful cases which was deemed hopeless at the time of operation we have ninety-three per cent cured.

A further study of the treated cases as regards duration of the lesion and extent of the lesion gives us the following data:

Duration	Cured	Recurrent
1 year	17	2
2 years	8	0
3 years	9	0
5 years	12	3
10 years	7	3

Size	Cured	Recurrent
Under 1 inch	33	2
1 to 2 inches	19	2
Extensive	4	4

As would naturally be expected the growths of extensive size or of long duration do not give so good a prognosis as the earlier or smaller lesions.

These figures show conclusively to my mind that surgery can still present us with the best statistics as to permanent cures. It is true that Sherwell[18] claims

to have cured about ninety per cent. of all his cases by means of the curette and the acid nitrate of mercury; but he admits that he has made no careful study as to this point. Pusey[19] reports seventy-two and one-half per cent. of cures in one hundred and eleven unselected cases of basal and pricked celled cancer. At present, however, we have no other figures as to the permanent results to be derived from the employment of other methods so much in vogue among dermatologists.

No paper upon the subject is complete without a word as to the value of the various arsenical or zinc chlorid pastes so frequently employed, not only by quacks but by many regular physicians. The method is extremely painful, the action of the paste is difficult to control, and the results, either cosmetic or permanent are no better than those secured by a competent surgeon. No caustic can compete with the actual cautery.

Radium is being highly extolled, but its advocates are giving us no figures as to the percentage of permanent cures obtained with it, possibly because it is still too new, although one cannot avoid the suspicion that certain of them are too busy advertising to search for the permanent results. Personally I have seen a number of extremely disastrous results following its use in apparently favorable cases. These cases have been duly reported.[20] There is no reason to believe that radium will accomplish anything that a modern X-ray treatment will not, except possibly in very exceptional instances. The single dose Roentgen ray treatment has now nearly displaced the old divided dose method in the hands of competent operators. But as yet we are ignorant as to what the permanent results are. That they are usually successful in temporarily detroying the neoplasm is almost universally admitted, and it is possible that we now have at our command a method that may supercede surgical removal of superficial cancers. But this is not as yet proven and cannot be for a number of years, MacKee, who is one of the pioneers in America, of the single dose method, tells me that he is now making a study of five-year cures, and that his percentage of cures will probaly run well over seventy in a large number of unselected cases, including many that were deemed inoperable.

CONCLUSIONS

There are two distinct types of skin cancer, the basal celled and the prickle celled. These two types run different clinical courses, and must be treated along different lines.

Basal celled tumors usually spring from pathological conditions of the skin, of which the senile keratosis is the commonest. Removal of these precancerous lesions would prevent most cases of cancer.

Basal celled cancers usually spring from the basal layer of the rete, and may be multicentric in origin

The disease is more common in men than in women, and Negroes are but exceptionally affected.

While the disease not infrequently starts during the fourth decade of life it is much commonest in the fifth and sixth decades.

Basal celled tumors are most frequently situated upon the skin of the face, where the majority of all cancers are of this character. They are extremely uncommon upon the limbs, and are rare exceptions upon the trunk.

A very small percentage of them metastasize to the neighboring glands. Hence local removal is usually sufficient to effect a cure.

Entirely too many cases are insufficiently treated at the onset.

In early growths competent surgery should cure well over ninety-five per cent. of all cases, while in late growths surgery will cure a fair number.

It is impossible to say what are the permanent results from other methods of treatment.

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DISCUSSION

Dr. R. W. Knox, Houston, Tex.—In connection with the subject of skin cancer I wish to take the liberty of mentioning briefly a case that occurred in the line of my surgical practice that had a most interesting clinical and pathological history. A young man of twenty-eight entered the hospital with all the symptoms of duodenal obstruction, pain and vomiting. Exploratory incision was made and the entire pylorus was found to be the integral part of a colloid cancer. A resection with anastomosis was done, stomach symptoms were greatly relieved and the patient able to return to work. He entered the hospital five months later with general carcinomatosis of the skin of the entire body, but stomach apparently normal. He died a few months later and post-mortem showed no apparent return of the disease in the stomach or other abdominal organ. The interesting feature of the case was the universal carcinomatosis of the skin. I have never seen a similar case.

Dr. Alexius McGlannon, Baltimore, Md.—Cancer of the skin or otherwise is a surgical condition and should be so conceded. Early cases should be operated upon.

The use of the actual cautery in the excision of these tumors is probably the most important late addition to the treatment of tumors. It has every advantage over every other form of cautery that can be used. It is much more rapid than a chemical caustic, gives us material for study, certainly cures the patient, and is of great advantage in handling these tumors. There can be no question that the skin cancer is to be treated by operation and not by any of the other methods in use by the dermatologists.

Dr. Mary Freeman, Perrine, Fla.—There is no question about the knife in the early stages; but unfortunately some of us get hold of them when they are long past the operative stage. I have now one in charge that began in 1892. It was treated with some caustic paste. Then it recurred in 1897. It was again treated. Then about 1902 it was apparently removed with caustic paste. It recurred in a year. Once more it was treated and disappeared until 1911. Then after an attack of influenza it increased rapidly. At that time it was examined by a cancer specialist of Tacoma, Washington, and pronounced inoperable, and the contents of the whole orbital section were at that time involved. X-ray was used with improvement for a while, but the patient was an elderly gentleman, and the X-ray soon disturbed the circulation to such an extent that it had to be discontinued, after about twenty-six applications, I believe. The X-ray seemed to check the growth. In 1913 the patient returned to Philadelphia. Radium was then used and it appeared to be reducing it, and the patient improved. But he never seemed to recover from any little backset until January of this year, when the application of the radium was made. The growth had involved the whole right cheek, and it looked ready to break down and slough away. In the application of the radium, January 20, it produced a neuritis of the optic nerve, and the eyeball came away soon afterward. I do not know whether it was the radium or the cancer that took the eyeball, but it is gone entirely. Hemorrhages became frequent, discharge was profuse and severe, and some of the superior maxilla coming away, about one-half to one inch. At this time the prognosis seemed absolutely bad. An article had occurred in the *Southern Medical Journal* in January, 1915,—an abstract of notes on ameba, by Rorer, in which it was stated by him that ameba was the cause of cancer. No one had commented upon it at all. It wasn't considered anything but a vision. I was in desperate straits. The patient is my father, and I applied emetine. In two weeks the hemorrhage ceased. At each application of the emetine a line of demarcation would show. That line receded gradually. You can cover the lesion easily with your thumb. I don't know what the outcome will be, but the patient has improved.

Dr. Hazen (closing).—The treatment of hopeless cases of cutaneous cancer would have been taken up had there been more time. We should always remember that some of them are not really cancer. Not long ago I heard of a case where a prominent dermatologist sent a case to a surgeon with about the following comments: "This is a hopeless rodent ulcer of the face; let's see what you can do with your cautery." The surgeon first did a biopsy, which revealed that the lesion was lupus vulgaris and not cancer, and he advised Roentgen ray treatment, which happened to cure this particular case; so he sent back the case cured, not by surgery, but by dermatological methods. However, in some apparently hopeless cases of cancer surgery will give either a permanent cure, or at least temporary relief. In a number of cases in this series the floor of the orbit was removed, and one or two of them have remained well. This simply shows that even in extreme cases surgery may cure. However, in cases of the aged or of those in bad physical condition the X-ray may be indicated from the onset. And yet at the present time we have practically no figures as to the permanency of X-ray cures.

AUTHORS' ABSTRACTS

Surgery, Gynecology, Obstetrics and Genito-Urinary Diseases

On the Relief of Dysmenorrhea and Sterility by the Intra-Uterine Stem. Hubert A. Royster, Raleigh, N. C., Virginia Medical Semi-Monthly, October, 1916, p. 339.

An extended experience has caused deep interest in the anteflextion type of dysmenorrhea, the type in which the pain comes on a few hours to a day before the flow and is relieved as soon as the flow is freely established. Anteflexion is

seen in young single women or in sterile married women, and is pathological only when its symptoms appear,—pain and sterility. A large number of these cases are cured by using means to keep the cervical canal open. The treatment depends upon the introduction of an intrauterine stem under ether following a menstrual period and allowing it to remain over three subsequent periods. The first succeeding period is generally as painful as before, but the second should be less painful and the third almost or quite free from pain. The stem can be safely left for a longer time, until a painless period shall have arrived. The usual practice of most operators is to leave it in for one or two weeks, while the patient is in her bed or room. The stem must remain over at least three periods to obtain the best results. These patients must be kept under close observation and must receive general attention to habits, "nerves" and hygiene. The author prefers the Wylie drain. He reports 59 cases treated in the manner described. Forty-eight were permanently relived; in 10 of these the treatment was repeated. Cure of sterility resulted in sixteen, married from two to sixteen years.

The Interposition Operation of Watkins-Wertheim, in the Treatment of Cystocele and Prolapsus Uteri. Louis Frank, Louisville, Ky., The American Journal of Obsterics, November, 1916, p. 780.

The principles of the operation are: (1) The bladder is supported by and rests upon the posterior wall of the uterus. (2) The uterus is elevated in the pelvis by being tipped forward; in fact, its position is changed about 180 degrees. The twist in the broad ligaments produced by the changed position of the uterus perceptibly shortens them. (3) The tendency for the uterus and bladder to prolapse following the operation are antagonistic, as any sagging of the bladder increases the anterior displacement of the uterus, and any prolapse of the uterus elevates the bladder wall. In the completed operation the bladder rests upon the posterior wall of the uterus.

So far as can be ascertained, the only objection which have been urged against the Watkins-Wertheim operation are: (1) Its employment is contraindicated, without certain modifications, during the child-bearing period because of complications which might arise during the pregnancy and parturition. This objection, however, seems unimportant since extensive uterine prolapse and cystocele usually occur most frequently after the menopause. (2) The difficult technic incident thereto. This objection also seems untenable as the technic is not so difficult as that incident to other operations sufficiently radical to offer permanent correction of extensive prolapse.

Even in complete uterine prolapse, if the uterus be not seriously diseased, a modified Watkins-Wertheim operation seems preferable to hysterectomy, as the uterus affords ideal support for the prolapsed bladder. The operation should be upon just as firm and stable a foundation and should have the same standing as the operation of Bassini for the radical cure of inguinal hernia.

Perforation in Typhoid. LeRoy Long, Oklahoma City, Okla., Journal of the Oklahoma State Medical Association, January, 1917, p. 12.

The author calls attention to the possibility of early perforation, reporting the case of a patient successfully operated upon after an illness of only ten days.

The symptoms in the early case with clear mind are contrasted with those in the late case with dull mentality. In the early case there is a history of "sudden adominal pain that does not abate," with stiffening of abdominal muscles, frequent, shallow respiration, suddeen increase in pulse, the rate. In the late case when the mind is not clear he points out as an observation of "superlative importance" that the patient is decidedly worse, and that the change in condition began suddenly. If, in such a case, the respirations are faster and shallower, the pulse more frequent, and there are evidences of restlessness and collapse,—if hemorrhage can be excluded, which is usually possible,—a diagnosis of perforation should be made. The blood count is not a reliable guide, nor is the obliteration of liver dullness of value.

The author points out that half the mortality in typhoid is due to perforation, and he urges the necessity of early operation. He insists that operation be rapid, doing essential things only, closing with through-and-through sutures, regardless of the danger of incisional hernia, as he regards the economizing of time the "essence of the requirements." He calls attention to the necessity for drainage and the usefulness of post-operative proctoclysis.

Stones in the Urinary Tract. Edgar G. Ballenger and Omar F. Elder, Atlanta, Ga. New York Medical Journal, Vol. CV, No. 5, February 3, 1917, p. 203.

The majority of stones originate in the kidneys as a deposit of crystals around masses of mucus, microorganisms, parasites, pus, blood clots, foreign bodies, etc. Their formation appears to be favored by overeating, insufficient exercise, and certain hereditary or constitutional factors and certain localities.

Stones may occur in one or both kidneys, in the ureters, bladder, prostate, deep urethra, anterior urethra, and fossa navicularis. The character of the disturbance caused by the calculus varies with its location, size and duration.

The diagnosis of stone in the kidney is made by the presence of pain, tenderness on heavy percussion, recurrent hematuria, persisting pyuria, and X-ray examinations. The pain usually extends downward towards the genitals and is followed by macroscopic or microscopic hematuria. Not infrequently patients are subjected to operations for the relief of symptoms caused by renal or ureteral stones which are not recognized as such until subsequently when more careful examinations are made to determine the reason why the patient was not cured by the operation.

The danger of a radical surgical operation to excise an ureteral stone is so great that such a procedure should not be employed until all reasonable cystoscopic methods have been carefully

tried. Flexible ureteral forceps may at time permit the extraction of a stone low in the ureter. After all measures fail, and not until then, should the stone be excised, for in case the stone passes, a great saving of time, danger and suffering has been accomplished. In case of failure the more radical measure may be employed just as if the more conservative means had not been attempted. The best method of removing small stones from the bladder, and the one with the lowest mortality rate, is to crush the stone with a lithotrite and to wash out the fragments. With the aid of the lithotrite cystocope, this is a comparatively simple procedure when it is indicated.

For the larger stones or those encysted, a suprapublic cystotomy should be done and the stone removed. Calculi of the prostate are not rare, but as the stones are small as a rule, they do not assume the importance of calculi in other parts of the genito-urinary tract. Usually they demand attention only when they cause retention of prostatic secretion. The commonest type of prostatic calculi are merely enlarged amylaceous bodies. It is only when they occur in large numbers or are transformed, or become incrusted with organic salts, that they produce pathological lesions.

Blood Chemical Methods in the Estimation of Renal Function. R. B. H Gradwohl, St. Louis, Mo. The Urologic and Cutaneous Review, Vol. XXI, No. 2, February, 117, p. 64.

This paper brings up the question of the usefulness of the newer colorimetric blood analyses for urea nitrogen, uric acid, creatinine and sugar, and in the estimation of operative risk on urologic surgical material. The exact status of the normal and the abnormal individual is here considered, together with the author's opinion upon the value of this new work in this line of surgery as compared with the estimation of kidney functions by means of routine urine analysis and the 'phthalein dye test of Geraghty-Rowntree. From the writer's experience he is inclined to believe that this new method offers a rich field for investigation in all branches of surgery as well as internal medicine. The value of the work as it stands today is, first, that we can tell by a blood-sugar estimation exactly the condition of carbohydrate metabolism in frank diabetic cases; secondly, that we can catch a case of chronic interstitial nephritis in its most incipient form, long before there are any urinary changes, from an undue accumulation of uric acid alone, or uric acid and urea nitrogen, or even uric acid, urea nitrogen and creatinine in the suspected individual's blood. He points out the great value from a prognostic standpoint of a creatinine value of 5 milligrams per 100 cubic centimeters of blood—confirming Myers and Lough's contention that any figure around 5 mgs. of creatinine means an impending fatal outcome.

This paper constitutes a plea for the genito-urinary or general surgeon to use blood chemical methods in his preliminary examinations of his patients. He states that fuller data on this subject will be presented before the next meeting of the American Urological Association.

A Liquid Heat Apparatus to Supplant the Electric Cautery Used by Percy. J. Tate Mason, Seattle, Washington. Surgery, Gynecology and Obstetrics, Vol. XXIV, No. 2, February, 1917, p. 242.

This liquid heat apparatus was gotten up that the operator might have an apparatus with which heat could be maintained under absolute control and within a fraction of a degree throughout any operative procedure.

Dr. Percy with many others have demonstrated that cancer-cells are killed at about 120 degrees Fahrenheit applied for ten minutes, while connective tissue cells will survive up to 140 degrees Fahrenheit.

A small heating plant is filled with heavy oil or water. To this is attached two pieces of heavy rubber tubing. A small electric motor with a fan is connected to the lowest tube, so that the oil can be pumped steadily through the tube into the hollow applicator and back to the heating plant. As the oil (or water if the operator does not wish to go above 212 degrees Fahrenheit) goes back to the heating plant it runs over a thermometer enclosed in a glass tube, which enables the operator to see at all times the exact heat that is being applied. A thermostat is made with the heating plant which enables it to hold its heat at any given temperature, which is governed by a screw in the side.

Incontinence of Urine in Women. M. J. Gelpi, New Orleans, La., New Orleans Medical and Surgical Journal, January, 1917, p. 486.

The discussion of incontinence is limited to the type due to prolapse of the anterior vaginal septum. Patients with this type of incontinence complain of having a "weak" bladder and state that when they cough or strain, the urine irresistibly comes out of the bladder. Attention is called to the true pathology in these cases, which consists as described by Muret, of a sagging of the anterior vaginal wall accompanied by relaxation of the urethro-vesical sphincter and a funnel-shaped dilation of the urethra. This dilation of the urethra is produced especially by a dropping downward or sagging of the posterior urethral wall.

The treatment advised for the inoperable cases consists in the use of the old skene pessary. As regards operative treatment, attention is called to the most practical suggestions maded in comparatively recent years. The troatment adopted by the author is a modification of that of Muret, and consists of the following steps:

A very extensive oval denudation of the anterior vaginal wall; single purse-string or "U" sutures at the urethro-vesical neck; and closure by interrupted stitches so as to make the suture line assume the shape of a capital "I." All stitches include mucosa, fascia fibres and scar tissue. The method is recommended because of its simplicity, its fulfillment of anatomical and pathological requirements and because it yields excellent clinical results.

(Continued on page 260.)

EYE, EAR, NOSE AND THROAT

AURAL PHENOMENA THE RESULT OF UNUSUAL INFLUENCES*

By E. H. Cary, M.D., LL.B., F.A.C.S.,
Dallas, Tex.

The title of this paper was given to the Secretary while I was considering a number of interesting cases occurring in my practice which had more or less relation to the subject. After perusing some of the literature at hand, I was impressed with the fact that "there is nothing new under the sun." However, my viewpoint, based upon my experience, may differ sufficiently to be of interest, for it is not my intention just to report cases, as many histories have been given stranger in occurrence yet similar to those I have in mind, but without a satisfactory explanation.

It may not be out of place to repeat here that the most competent ophthalmologist is the one who has the most definite knowledge of oto-laryngologic diseases, and it is quite apparent that the reverse of this statement is equally true. No man limiting his observation to the treatment of any one part will likely observe correctly the symptomatology; and he would hardly be able to interpret any of the signs which certain types of cases offer. The greatest danger in the practice of our science and art comes from the too narrowing process of intensive study of one particular part of the body to the exclusion of the broader mental grasp of the body as a whole. In the abstract, the sum total of knowledge may be greater, but it requires a watchful policy on the part of the clinician to interpret the symptomatology offered by nerve irritation, thereby avoiding incorrect conclusions.

It is interesting why a high degree of hyperopia should cause tinnitus aurium in one individual, while thousands of cases of eye strain may have many other symptoms and not this. It would be worth while if one could evolve some explanation which would aid in elucidating the subject, thus making it possible to understand many cases which approximate the extreme, all of which cases may have a similar origin but vary in severity.

Recurring pain in the mastoid to a simple closure of the Eustachian tube are phenomena due frequently to one or more reflexes being involved, usually over a long period of time, these reflexes creating pain, dizziness, tinnitus aurium, or any or all of these symptoms with or without appreciable loss of hearing. So it is well to examine every case, keeping in mind all the possibilities of reflex irritation from whatever source, whether it be the fifth, seventh or ninth nerves through their sympathetic connections. Any one of these may be at fault, for the impulses arise at the irritated points of their distribution and are then referred to the place where the symptoms alone attract attention.

Keeping the above general statements in mind, I will take up briefly some of the nervous anatomy which should be considered in the study of certain types of cases which are frequently seen, many of which I fear are often treated as O. M. C. C., but should be differentiated from this chronic condition, leaving the type of case under consideration to be classified separately. I place before you a chart gotten out by Pegler, which is a map scheme of the sensory distribution of the fifth nerve with its ganglia and connections. From the map you can easily trace the distribution of this nerve to the eye, to the nose and pharynx, to the tonsils, Eustachian tube and tympanum, along with its sympathetic connections. The seventh nerve is of more or less interest in its relationship to these other nerves, particularly so in sending a branch to the stapedius muscle, the ninth nerve being of extreme interest, inasmuch as it largely constitutes the nerve supply of the tonsils, the Eustachian tube, the mastoid cells, the tympanum, the round and oval windows and a branch in the small superficial petrosal,

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

which passes through the otic ganglion, where a branch supplies the tensor tympani. Todd, in a paper in 1910, describes the glossopharyngeal with fair accuracy. You can follow this description on the chart.

"At the petrous ganglion the glossopharyngeal nerve is connected with the vagus and sympathetic nerves by communicating branches. The branches of the glossopharyngeal nerve other than the terminal lingual, and communicating, are the meningeal, tympanic, carotid, pharyngeal, muscular and tonsillar. The tympanic branch arises from the petrous ganglion and passes to the inner wall of the tympanum. It ramifies on the promotory of the tympanum, forming the tympanic plexus which supplies branches to the round and oval windows and to the Eustachian tube and communicates with the carotid plexus and with the great deep, small superficial and petrosal nerves. The pharyngeal branches join branches from the vagus, superior laryngeal and sympathetic nerves and from the pharyngeal plexus which supplies the pharynx. The communicating branches arise from the petrous ganglion and run to the superior cervical ganglion to the auricular branch of the vagus, forming a loop, and one from the nerve just below the ganglion joins the lingual branch of the facial nerve. The tonsillar branches arise from under the hyoglossus muscle and are distributed to and around the tonsils, forming a plexus, from which branches to the fauces and soft palate are derived.

"Meckel's, or the sphencpalatine ganglion, is situated in the sphenomaxillary fossa below the superior maxillary nerve. Its sensory root is derived from the superior maxillary through the nomaxillary nerve. Its motor root is derived from the facial through the great superficial petrosal nerve which assists the great deep petrosal in forming the vidian nerve. Its sympathetic root, the great deep petrosal nerve just mentioned, is derived from the carotid plexus. The motor and sympathetic roots enter the sphenomaxillary fossa as the vidian nerve. Its branches are classified as the ascending, descending, internal, and posterior.

"The ascending or orbital branches pass through the sphenomaxillary fissure and pierce the inner wall of the orbit to supply the sphenoid sinus and posterior ethmoid cells. The descending or palatine branches are derived mainly from the sphenopalatine branches of the superior maxillary nerve. They are divided into anterior, external and posterior palatine nerves. The anterior or large nerve passes down in the posterior palatine canal together with a posterior palatine artery and appears on the hard palate at the posterior palatine foramen. It runs forward in a groove on the under surface of the hard palate and joins the terminal portion of the nasopalatine nerve. It supplies the gums and the mucoperiosteum of the hard palate. While in the posterior palatine canal it gives off two branches (inferior nasal nerves) which pierce the vertical plate of the palate bone to supply the mucous membrane of the back part of the middle and inferior meatuses and the inferior turbinated bone. The external or middle palatine nerve descends in the external palatine canal to supply the tonsil and adjacent mucous membrane. The posterior palatine nerve descends in the accessory palatine canal to supply the uvular muscles. With the external palatine nerve it joins a branch from the glossopharyngeal nerve to form the circulus tonsillaris, a plexus around the tonsil. The internal or nasal branches supply the mucous membrane of the septum and the posterior part of the middle and superior turbinated bone and of the posterior ethmoid cells and the antrum of Highmore. The posterior branch of pharyngeal nerve runs backward through the pterygopalatine canal and supplies the upper part of the pharynx and the Eustachian tube."

A typical case of moderate involvement is a patient who comes in with slight loss of hearing, with or without pain which has involved the mastoid, and who complains of dizziness at times, with closure of the Eustachian tubes with more or less marked retraction of the drum membrane, with all the discomfort and pain directed to the ear and without any symptoms elsewhere. Examination of the case may show nothing strikingly pathological in the nose and throat, but a high degree of hyperopia will be found. On the other hand, associated with the hyperopia we may find chronically infected but submerged tonsils which require a tonsillectomy. Whereas if we find a turbinate disturbing the septum, or any other nasal involvement, the reflex symptoms will most likely occur in and around the eye. Any one of these factors may dominate in producing a reflex trouble.

In a paper which I read at the meeting of the Southern Medical Association I am convinced that I was right in assuming that many vascular disturbances of the eye are the result of nervous impulses eminating from the distribution of the fifth nerve in the nose, distributing the natural order of things in the ciliary ganglion, causing a vaso-motor paresis which results from chronic irritation of the nasal branch of the fifth nerve, often due to pressure, but apparently not the result of infection. Now, reversing the order of things, the history of the following case will substantiate the theory that it is not the result of a toxemia, but mere distress of normal function of the nerve distribution, inasmuch as an eye strain without infection, without conscious distress of the organ itself, brought about a functional dis-

order to the ear which simulated chronic inflammation, and which would unquestionably have led to deafness. The patient had already all the attendant distress of an exaggerated tinnitus aurium, dizziness, etc.:

Case 1.—Father and mother both dead. Mother died of pneumonia, in 1901, age 51. Father died of heart trouble, February 4, 1914, age 62. One brother living. Three sisters living, one dead—died of pneumonia, age 34. There is no ear trouble in the family history. Had congestion of the brain about twenty-one years ago and a serious case of typhoid fever lasting from December, 1908, until March, 1909. This present trouble began about the first of January, 1916. The predominant systems were intense roaring in the ears, principally in the left ear, and partly in the right ear, some dizziness, slight local pain at times around the drum membrane of the left ear, and dull, heavy pain extending from the back of the left ear around the base of the skull to the center of the back of the head. The resulting effect of it was nervousness and a feeling of general depression.

The above history does not tell of the bad tonsils, which were removed, of the deflected septum, which was straightened, of the many times his tubes were catheterized and sometimes probed without relief; does not speak of his insomnia and many symptoms that made him uncomfortable, and yet the ear symptoms persisted. He is a minister, living in an adjoining town, and when seen he was usually in a hurry to catch his train. (No doubt this fact kept me from looking into his eyes earlier.) When I suggested atropine for refraction, he said: "I have perfect eyes; never the slightest trouble." Atropine was used, however, and there was hyperopia of some three diopters with a small amount of astigmatism. With relaxation of his ciliary muscles, his exasperating tinnitus disappeared, his Eustachian tubes were made easy to catheterize, negative pressure was gotten rid of, and the appearance of his drum membrane, from the standpoint of position and color, was more normal. The patient could sleep and nervousness disappeared. Where pain in the mastoid was not in case number one severe, nor even suggestive of disease, 'twas present, as he described it.

Case 2.—Mrs. O., in 1909, came to my office for consultation as to mastoid operation which had been suggested as a relief of a pain involving the left ear which was unbearable. Without details that would tire you, a corrected high degree of hyperopia plus 5.50 in each eye immediately stopped all pain and cured the mastoid.

Case 3.—Miss McK., from out on the plains, came to me in 1915 for a mastoid operation on account of pain in her mastoid which had been more or less a factor for two years. She had Eustachian tubes which I could not catheterize successfully. Such tubes are classified as strictured. She had an eye measurement of plus 3.25 Sph. in each eye. She was 39 with what is usually found in such cases of hyperopia, an ability to accept but little of her correction, only plus 1.00, due to chronic spasm of ciliary muscle. Later the strength of her glasses was increased as she could accept it. The mastoid pain had subsided with the cycloplegic. Her hearing had never been a factor. Her Eustachian tubes became normal as her ciliary muscle finally relaxed. And so on and on I could recite dozens of cases with symptomatology varying here and there.

Case 4.—Miss A. in 1913 came to me on account of mastoid pain. Every scientific method had been utilized and a mastoiditis as such was excluded. But with a negative X-ray reading, refraction, and elimination of hysteria as a cause, she manifesting every evidence of uncontrolable pain, I finally operated upon her on the right side with the idea of obliterating the cells. A large antrum was found, but no inflammation. Patient made an uneventful recovery, followed very soon by a similar pain in the left mastoid. This was obliterated in the same manner with prompt recovery, to be followed by lessened pain radiating indefinitely in and around the ear till an impacted deciduous tooth was removed from the lower jaw, when all pain subsided. She had been refracted and X-rayed. The second X-ray of her inferior maxilla found the small impacted tooth.

I could relate several cases, similar in nature, where the mastoid was not operated upon, but where refraction of the eyes, or an extraction of a tooth, had relieved all symptoms. I am sure this has been the experience of all of you. The above cases, related in a simple manner, are types of many, many others the details of which I have, but which are not essential here.

The mastoid operation on a non-inflammatory mastoid, which at least equalized air pressure, suggested a line of thought which had been raised before in cases of sub-acute catarrhal otitis media where the Eustachian tube could not be improved by direct treatment. The observation of a rupture as an incident, or a purposely incised tympanic membrane, producing marked improvement in a tubal condition naturally raised the question, why? So in my office and at my clinic, I, and principally my associate, Dr. D. L. Bettison, have performed paracentesis on selected cases many times with prompt relief of certain symptoms. It is fair to say, however, in seeking an explanation that I became conscious of the historical fact that this procedure as a treatment for ear troubles had long before been advocated and had fallen into disrepute. Even windows had been made in the tympanic membrane, ossiculectomy had been done,

etc. No doubt some one used judgment in selecting cases and reported them. The many did not. Hence, making an opening in the tympanic membrane fell by the wayside. I am not going to attempt to revive the practice, but in passing I may say there are conditions where the mere tympanic puncture may tide a case over by neutralizing negative pressure and temporarily relieving all reflex ear symptoms, the symptoms to return unless the cause ceases about the same time, and as you may suppose, this does not always and will not often happen.

Now we readily understand the nerve distribution to these parts, but the role the sympathetic exerts upon each of them is the interesting thing.

We are, as a rule, only concerned when there is pain from a reflex. Here and there our attention may be attracted to nutritional changes due to some remote irritation which must be explained through the sympathetic control of these nerves. Take Case 1, the preacher who had the tinnitus aurium, closure of the Eustachian tubes, retracted, and hyperemic tympanum as the prevailing symptoms. Whatever toxemia he may have had from tonsils and nose was long since relieved; chronic ciliary spasm was the cause. The mechanism of it, to my mind, was like the following: The tonic spasm of his ciliary muscle required an enormous number of impulses over his third nerve, the sympathetic control became involved in harmonizing the extraordinary demands of his ciliary muscle through its constant exertion; the fifth nerve didn't manifest any uneasiness in and around the eye, but the impulses of the sympathetic through the otic ganglion became involved and certain nerve fibres going to certain parts lost their control. Notably, the branch to the tensor palati, another to the tensor tympani, and again likely the levator palati from the eleventh.

For instance, the normal Eustachian tube is partially closed and is opened in two ways: first, by the act of swallowing when the tensor palati and levator palati muscles open it for air to equalize a partial vacuum produced by swallowing a part of the air in the upper pharynx; secondly, the sense of atmospheric pressure from without is the signal for pressure to be equalized from within, and this sense acts as a stimulus to the nerves controlling the tensor palati and likely levator palati, which then respond by opening the Eustachian tubes. These muscles are under sympathetic control; the motor root of the fifth through the otic ganglion goes to both tensor tympani and tensor palati. Hence an immediate effect of disturbed impulses would be in activity on the part of these muscles, the tensor palati influencing the opening of the tube directly, the tensor tympani indirectly, through relaxation of the tympanic membrane. Then the levator palati becomes involved in its activity through the blunting of senses of necessity. So the eleventh is not active. The air in the tubes and middle ear is more or less absorbed and then we have negative pressure; then the ninth nerve distribution through otic ganglion becomes disturbed, either directly as the fifth through the sympathetic, or it does so through negative pressure and relaxation of the vessels. Consequent hyperemia brings about further closure of the tubes, with pain radiating throughout this nerve's distribution, which has been earlier described. It is distributed to the oval and round windows of the internal ear and in several ways could disturb the labyrinthian circulation, bringing about dizziness, etc. And it is conceivable that the mechanism can be from a point of irritation through any of the ganglia.

DISCUSSION

Dr. John H. Foster, Houston, Tex.—It seems to me that there is no branch of our work in which we are weaker than in the neurology of these parts. Every one of us should have the chart that the doctor has displayed here and study it every day. The field that is opened up by the reflex nerve disturbances from one part to another is one from which we have a great deal to learn. I have been greatly interested in the work of Dr. Sluder, of St. Louis, on reflex symptoms from speno-palatine ganglion irritation, and I think that we ought to give a great deal of thought to it. It certainly accounts for many of the obscure cases which we ought to relieve, but sometimes do not.

Dr. Cary (closing).—The truth is, I have seen many cases of blindness, that is, partial blindness. I could report them. Recently I examined a man who had been partially blind for years—six years. It was very unique. I looked in his eyes; I could not find any basis for it. That man

had not lost his sense of vision, but he could see 5/200. He had lost that much. And that had gone over six years. You would think any irritation that would produce disturbances through the vasomotor system that would last six years would have finally involved the parts sufficiently to have eliminated the hope of normal vision. On not being able to find a definite cause, and having a constant bug, if you will allow me to say it, for looking for a point of irritation to account pathologically for whatever I do find, I investigated the matter. In this case the left eye was involved, the septum of the same side was deflected poteriarly to the same side, closing the posterior naves, blocking the natural channels, becoming a constant source of irritation, and narrowing the space too much to allow ventilation of the sinuses. Also he had adhesions of the mucus membranes, the mucus membranes became boggy as well, and the terminal filaments of the fifth nerve became irritated and created a condition which brought about disturbed nervous impulses. We got rid of it and, by the gods, he saw 20/20 inside of three or four days.

A boy came in who could not see for nine months. He had 15/200 vision, and I found in this case a very slight variation in the nasal condition as described above. He was in the other day before I left. He could see 20/20 immediately after the operation without ever having removed the nasal tempons.

This is not hysteria. There is the case (indicating). I could recite half a dozen of just as much interest.

THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM*

By W. T. Patton, Ph. C., M. D., F. A. C. S., New Orleans, La.

INTRODUCTION

In reading this paper before this particular Section, the author wishes to ask your patience for bringing up a subject about which so much has been written, and for offering very little new or original bearing upon the subject. Yet after having visited many clinics in various parts of the country, having talked to, and having seen many a specialist operate; and after having personally performed something over six hundred submucous resections, he sincerely believes that this paper is justified.

This operation seems to be a bugbear to a great many able specialists. The writer has heard of a number of men putting off the operation by removing turbinates or doing some other simple operation, saying that they could not operate in less than two or three hours, and that even then their results were not good. In other instances he has seen men rush through the operation, proudly saying that they had finished it in ten minutes. Yet if the case were examined, it would be found that only part of the quadrangular cartilage had been removed and very little if any of the bony septum disturbed, an operation which in most cases is useless, if not harmful, for it makes a secondary operation very difficult.

HISTORICAL

The submucous operation is a comparatively new procedure. In 1885, Burkhardt recommended leaving the mucous membrane on both sides of septum when the cartilage was removed. But it was years after this before the technique was brought to its present perfection.

Boenninghaus, in 1899, made some improvements in technique which first rendered the submucous operation a justifiable one.

In 1900, G. Killian greatly improved upon Boenninghaus' method of operation. It is chiefly Killian, therefore, to whom we are indebted, if not for the conception, at least for the thorough elaboration of the present accepted method of dealing with deviations of the nasal septum. In this country Freer, in 1903, described methods for the submucous ablation of deviated and thickened parts of the nasal septum, and invented for that purpose a large number of knives, forceps, rongeurs, etc., of special pattern, which have been extensively used in America since then.

ANATOMY

First, let us consider briefly the anatomy of the nasal septum. This is best studied by looking at sketches. It will be seen that the large quadrangular cartilage, with its caudal prolongation, forms most of the anterior and upper part of the septum. This cartilage fits into a groove below, formed by the nasal spine, premaxillary wing and vomer. The premaxilla, a bone separate in infancy but later fused with the superior maxilla, forms the lower part, just behind the nasal spine. Just posterior to this we have the anterior palatine foramen, which transmits the naso-palatine nerve and the anterior palatine vessels;

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next the crest of the superior maxilla and crest of palate bone, which above form a groove into which the vomer fits. The upper posterior part of the septum is formed by the perpendicular plate of the ethmoid. The nerve supply of the septum comes from the vidian (upper and posterior part), naso-palatine (middle) and nasal branch of ophthalmic (anterior part).

INDICATIONS

The next questions that should be asked are, what are the indications for a submucous resection? Certainly not just because the septum is deviated, for in that case we would operate upon nearly all septums, as it is rare to find a straight one. Study the symptoms, history, condition of the nose and sinuses, knowing what the operation can and cannot accomplish. The grade of deviation is not necessarily in direct proportion to the amount of trouble it is likely to cause; a comparatively small deviation high up in the region of the middle turbinate will, as a rule, produce more symptoms than a larger deviation low down in the inferior meatus, while some marked deviations produce no symptoms.

It is needless to dwell upon extreme cases, where the septum is very crooked, occludes one or both nostrils, we are sure of the wonderful improvement on correcting the deformity. There is that other larger class of cases with slight deviation, where indications are not at all clear-cut; these we have to study with care and observe under different conditions and ask ourselves two questions: Will operation help the patient? Will improvement be worth the sacrifice made by the patient? Is the deviated septum what the patient consulted the rhinologist for, or is it of secondary importance? Will some simple operation relieve the condition without sacrificing functioning tissue? Post-nasal discharge, frequent colds or a sense of fullness in the head, disturbances of vision, or deafness (catarrhal type), perversion of smell, pressure headaches, epilepsy, asthmatic attacks are all symptoms that can be and are often caused by deviated septum.

NASAL EXAMINATION

In making an examination of the nose, it is well always to examine first without application of any drug; then to apply cocaine, ten per cent. with one-fourth part of adrenalin sol. on thin wedges of cotton (first having folded them between two towels and squeezed out the excess), and to leave them in the nose fifteen minutes. After removing them the soft tissues are thoroughly shrunken, and we can see the bony frame of the nose, and more easily judge if the septum is the cause of the trouble. It can be said that with the best possible results of treatment, or even cauterization, there is as much space as it will be possible to obtain. The only way to correct bony deformity is operation.

ETIOLOGY

There are two great causes of deviation of the septum, trauma and asymmetry of growth. Of late trauma has been held to play but a minor part, the tendency being to consider unequal development of the halves of the head the chief cause. Undoubtedly this is true in certain cases, but more often the inequality of growth is confined to the bones which make the hard palate, namely, to the superior maxilla, the palate bones and premaxilla. There is no doubt that the irregular and delayed eruption of the teeth, especially of the incisor teeth, is the cause of this asymmetry in a large number of cases. Mouth-breathing from adenoids also causes the hard palate to become dome shaped, with an extremely high arch. This lessens the space between the hard base of the skull and the hard palate, the septum has to bend and we have a deviation. Trauma accounts for a great number of cases. Even though we are not able to obtain a history of trauma, it can often be blamed, for often a very slight lick in the nose will injure the septum and not cause any trouble with the outer nose.

TECHNIQUE

The submucous operation is either performed in the office or in the hospital. The writer much prefers to have cases in a hospital and operate in a semi-reclining position. This will obviate the embarrassment of having to stop the operation and prevent the patient's fainting. In nervous individuals I give morphine gr. 1/6 or scopolamine gr. 1/150 and morphine gr. 1/8 before coming to the operating room. The patient is placed upon the table with a back rest and several pillows. The nose is packed with a thin wedge of cotton satu-

rated with a ten per cent. cocaine and adrenalin sol. (30 drops to an ounce of sol.). First place the cotton between two towels and press out the excess of the solution. This is allowed to remain in the nose for fifteen minutes. It can often be done to advantage in patient's room. If the cotton is thoroughly squeezed as described, there will be very little cocaine absorbed, and it can be left in the nose without fear. The hair is now cut from the entrance of the nose; the face and entrance to the nose is washed with alcohol; and the cutaneous entrance to the nose is painted with tr. iodin.

Now one of two methods can be used, either rubbing the mucous membrane of the septum with a ten per cent. sol. of cocaine or cocaine mud; or the injection method with 0.5 % novocaine sol. If unable to obtain novocaine, No. 1 Schleich sol. may be used. Add fifteen minims of adrenalin sol. to one ounce of either of the above. Now with a strong syringe and a long needle (dental syringe works admirably) begin the injection just in front of the proposed incision, making two punctures, one above and one near the floor, attempting to place the point of the needle between the cartilage and perichondrium. Infiltrating slowly, using quite a little force, the mucous membrane will be seen to blanch and often separate from the cartilage. Next insert the needle higher, at a point about opposite the middle turbinate, and then near the floor. If all these four points have been properly infiltrated on both sides, the operation can be performed without pain. With marked deviation in front, it will be necessary to infiltrate anteriorly, removing part of the cartilage and bone, and then infiltrating behind. The advantages of the injection method are: (1) It is much quicker; (2) it thickens the membranes and makes tearing less common; (3) it aids a great deal in separation; and (4) the toxic symptoms are much less and the anesthesia is more perfect.

The writer makes an incision on the side of the convexity, just in front of the deviation, unless the deformity comes too far forward, in which case it is advisable to leave a little of the deflection rather than take a chance of the falling of the tip of the nose.

Often when the cartilage is dislocated, if the septum is removed posteriorly, leaving a strip of cartilage to support the tip, it will be found that the dislocation can be replaced. The author prefers to use a Freer's submucous knife (and prefers that it be fairly dull). He cuts through the mucous membrane, pericondrium and cartilage to the perichondrium of the opposite side. This with a little practice and a dull knife is very easy and makes the end of the cartilage stand out much plainer and renders the beginning of the separation very easy. Use Freer's sharp elevator until the separation is well started and then any of the blunt separators will do. Unless there is a very acute angle, the remainder of the separation should be a matter of only a few seconds. If there is an acute angle, work up to the apex of the angle, and then by pushing the bone to the opposite side the work can usually be performed. The floor is the part that gives the most trouble. Up to the present stage of the operation about ten minutes should be spent in separating the membrane. In the lower part of the septum, it must be remembered that the fibers run from before backward and outward, so that it is necessary to get behind and come forward with one of the hook separators, like the Myles golf stick. After the membrances are all thoroughly separated, place the speculum devised by the author into the flap with the cartilage in the center. In this way there is a steel bar on either side between the cartilage and the membranes, which makes it an easy matter with either the swivel knife or any of a number of biting forceps to remove any or all of the septum, without danger of biting the membranes. The Hurd seems the best forceps for removing most of the septum. The McCoy straight forceps works well on the floor. The Ballenger chisel also is very useful for removal of the nasal spine and premaxilla.

The only caution to be taken is to avoid removing the bone too high and too far forward. It is not safe to leave less than one-eighth of an inch both along the roof and the front end of the cartilage, and it is much better to leave one-fourth of an inch. The safer way would be to cut the upper part of the cartilage and bone with scissors or the Gnenwald punch, for with the va-

rious breaking forceps there is some risk of dislocating the upper anterior end of the cartilage, which would give either a sunken nose or a fallen tip. Also there is some danger of fracturing the cribriform plate. After the upper attachment of the septum is severed, if the membrane is all separated, very little harm can be done, and one should remove the remainder of the septum in about ten minutes.

If there is much bleeding when the premaxilla is chiseled off, it is wise to control it with a little bone wax. The septal space is now cleaned with a cotton swab, being careful to see that all fragments of the bones are removed. The space is now swabbed with a solution of fresh ten per cent. argyol. It seems wise to make a small cut through the membrane posteriorly and near the floor for drainage. The flaps are now placed together properly and the author's septal clamp adjusted. (This is two steel blades, fastened with a spring, which come together with just sufficient force to hold the flaps together.) The patient breathes very nicely and there is less bleeding than with packs, less danger of hematoma and certainly less headache. In every way the patient is much more comfortable. This is removed in twenty-four hours. The patient is allowed to blow his nose, which is then washed out with salt solution and vaseline or liquid alboline is sprayed into the nose. The patient is instructed to wash out the nose every four hours with an alkaline antiseptic, one to three, or with normal salt solution, being especially cautioned not to blow the nose hard at any time for fear of causing otitis. Most cases remain in the hospital over night and at home the next day. They can usually return to work on the third day.

Should one prefer to use a pack in the nose, which is advisable if the membranes have been badly lacerated, the most comfortable form is a gauze two inches wide and one yard long, folded upon itself four times, so that all the edges are turned in and we have about one-half inch of gauze. First, with the author's long submucous speculum insert a double piece of gutta-percha tissue or impermephane and open the speculum, which has the tissue on either side of the blades. Now having passed the gauze through vaseline or K. Y. jelly, pack layer by layer until one nostril is fairly well filled. Remove the speculum and fold the ends of the gutta-percha so that the gauze is surrounded by the tissue, as an envelope and very little touches the mucous membrane. The other nostril is packed in the same way, and this packing is removed in twenty-four hours.

The Simpson nasal sponge splints are mentioned only to be condemned.

AFTER TREATMENT

The patient is kept in bed, best in a semi-reclining position, with an ice compress to the nose and eyes. Codein and aspirin is given if there is much pain.

It might be well to mention here that there is usually an hypertrophy of the posterior tip of the inferior turbinate on the side of the septal convexity, which should always be removed.

ACCIDENTS AND COMPLICATIONS

Septal perforation, sunken nose, sunken tips, hematoma, and abscess between the flaps, are the accidents and complications. Septal perforation is a much magnified bug-bear. In over six hundred cases the writer can only recall six perforations. Three cases were among his first operations. Two cases had previously been operated upon and one had several very sharp spurs. No doubt there were more, but he never had occasion to seek them. It is remarkable how much the membranes will stand if both are not perforated at the same place and are properly placed at the end of the operation.

By sunken nose is meant a sinking just above the tips. This happened once and was only slight. Slight sinking of the tips will always occur if the entire cartilage is removed in front. This may be scarcely noticable.

Hematoma is the most common of the complications. All that is necessary is to open the flaps, remove the clot, and if no bleeding exists, place the flaps together. If there is bleeding, it is best to pack the nose. Since the author has been using his clamp and making an incision posteriorly he has had no hematoma.

Abscess between the septal flaps occurs in

about two per cent. of cases and is sometimes rather troublesome. Open, cleanse and drain it.

AFTER-RESULTS

In about ninety-five per cent. of properly selected cases the results are excellent and all that could be wished.

Editor's Note: Discussion of Dr. Patton's paper follows the paper of Dr. Dodd as they were discussed together.

SUBMUCOUS RESECTION OF THE NASAL SEPTUM, WITH REPORT OF 100 CASES*

By C. S. Dodd, M. D.,
Petersburg, Va.

ANATOMY

The nasal septum is composed of cartilage and bone. The posterior bony part is formed from the vomer and the perpendicular plate of the ethmoid. The anterior or cartilaginous portion is somewhat quadrilateral in form, and is thicker at the margin than at the center. The cartilage is united to the bone by the pericondrium.

Conditions that produce nasal obstruction and are ameliorated or relieved by resection of the septum are:

First, spurs, which are local thickenings, cartiliginous or bony ridges; if on the cartilage, they are designated as ecchondroses; if on the bone, as exostoses.

Second, deviation is a permanent bending of the septum from the median line whereby the nasal cavities are no longer divided equally, one cavity being widened at the expense of the other. It is stated that seventy-five per cent. of all the white race have deviated septums, more often to the left, but it is seldom found in the Negro. The abnormality may be anteroposterior, vertical or sigmoid or S-shape.

Third, dislocated cartilage, either to the right or left, which is generally due to an injury or it may be congenital.

SYMPTOMS

These conditions produce the following symptoms:

1. Inability to breathe through the nose,
2. Discharge from the nose,
3. Tinnitus, dizziness, deafness, and other middle ear involvements,
4. Alteration in the voice,
5. Headache,
6. Snoring,
7. Night-mares,
8. Impaired sense of smell, and
9. Asthma or hay fever.

In many cases one or more of these symptoms are combined with many other symptoms too numerous to mention. Many and varied operations have been offered for relief of this nasal obstruction.

I have listened with interest to Ballinger, Freer and others, and have concluded that the old axiom, "So many men, so many minds," aptly applies to those who do the submucous operation.

PRELIMINARY STUDY

Before operating note the following:

1. Be sure that the nose has a septum with enough spur, deviation or demority to offer beneficial results when it is corrected.

2. Examine the patient carefully, noticing the condition of the heart and kidneys; ask if he is a bleeder; and beware of very nervous subjects.

OPERATION

In describing the operation, let the writer emphasize that he has no instruments to advertise.

Cleanse the face and nasal chambers with an antiseptic; wrap the head with a sterile towel; have the patient lie prone upon the operating table with the head elevated; and pack absorbent cotton well into the nasal cavities to prevent the blood's running back into the pharynx. Make application to the septum with a 20 % sol. of alypin; follow with pledgets of cotton moistened with the same strength of the drug; and allow them to remain in the nose ten or fifteen minutes. Remove the cotton and inject sterile water or very weak cocaine solution under the membrane. To make the line of incision painless, rub it with a wrapped applicator dipped in a sol. of iodin and menthol.

We operate from the left side of the nose, using a knife to cut through the membrane into the cartilage from the left side, and protecting the right side by a finger inserted into the right nostril. Then elevate the membrane on the left side of the sep-

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

tum well back and around the spurs, unless the latter is very extensive, which condition will be discussed later. After the left side is elevated, place the finger again into the right nasal chamber to protect the membrane on the same side of the septum, and cut carefully through the cartilage. Now use Freer's sharp elevator, and pass from the right to the left side of the septal cartilage and elevate the membrane from one-half to three-fourths of an inch back. The membrane may now be stripped off with any of the elevators the surgeon may select.

When the membrane has been well elevated, the cartilage may be removed with a swivel knife of Ballanger, or any other biting forceps. The most difficult part is the ridge along the floor, which may be removed with down-biting forceps, or better still, with the chisel. When there are spurs of large size, dissection may be performed for a short distance and the septum bitten away, thus elevating and removing the cartilage together. In case there is a profuse hemorrhage make application of adrenlin to the bleeding area.

When the operation is completed and all spicules of bone and cartilage have been carefully washed out, coapt the membrane and carefully inspect the cavity to see if any ridges of bone are left along the floor. The next step is to remove the cotton that has been placed back into the nasal chamber to shut off blood from the throat. Then pack the nose with gauze which has bismuth subnitrate or compound tincture of benzoin incorporated in its meshes.

In some cases we have used Berney's splints. Formerly we allowed the packing to remain in the cavities from twenty-four to thirty-six hours, but now only from six to ten hours. Some cases seem to recover without the least tendency to slough, while others need to be carefully watched and treated with antiseptic and even silver nitrate to the area. The patient remains in bed twenty-four hours.

We all get them, but of late we have not had any at the time of operation. However, they sometimes come later.

In two cases at the area about one-half an inch posterior to the line of incision there developed an ugly perforation, which we were unable to explain. Upon the fourth or fifth day after the operation the membrane began to darken, and in spite of all treatment a round area of the septum separated itself from the surrounding tissue and fell out. We can only account for this by stating that trauma must have been produced at the time of operation.

COMPLICATIONS

These vary. In two cases I have encountered hemorrhage that I could not control by any means known to me. I found upon investigation that they had always bled freely whenever the slightest flesh wound was received. Now I always enquire into this tendency.

PERFORATIONS

In quite a few, the nervous symptoms are noticed. Some are nauseated; others complain of severe pain in teeth; while still another group experience a choking sensation during and after operation.

Here we must relate the tragic result of one of our cases, and one which has taught us to be exceedingly careful and cautious in examining the heart, lungs, kidneys, etc., before operation. Something over a year ago we had an engagement to do this operation for a young lady; and when she came to the office, accompanied by her sister, a trained nurse, we noticed that the patient was very nervous, and so we advised her to postpone the operation. However, she insisted that it be performed then. We had her take a seat in the chair where we treat patients, examined her nose, had her get upon the operating table, began to make applications of the anesthetic, and in less than two minutes she sprang up stating that she was dying and expired immediately. The post-mortem showed that she had an ox-heart. She died before the application could possibly have entered the system. Let us all be careful as to this point.

RESULTS

In many cases the results are very gratifying, and we should not do this operation without weighing with care what one may reasonably expect. We but rarely operate upon any under fourteen or over fifty years of age.

In several cases when the ears were being affected the symptoms have subsided. Mouth breathing has been overcome in some of our younger subjects. Nasal discharge has subsided, and still in another

class they state that they do not catch cold so quickly. The hay fever symptoms are lessened, and in some cases they disappear.

DISCUSSION

Papers of Drs. Patton and Dodd

Dr. J. Calhoun McDougall, Atlanta, Ga.—For anesthesia I use a hypo. of morphine gr. 1/4, and scopolomine gr. 1/150, a half hour before the operation. Ten minutes before beginning I apply the local anesthesia, using an applicator of cotton saturated with adrenalin and cocaine flakes. It is applied three or four times,—never more than four times. This is perhaps the best anesthetic I have ever used for submucous work. I have used for packing the nares a 10 to 20 per cent. solution of cocaine and also alypin and novocaine. My method of operating is very similar to that of Dr. Patton. I use the Hurd biting forceps for removing the bone, and I like it very much. I was glad to know that Dr. Patton and Dr. Dodd apply very little or no packing to the nose for the submucous operation. Personally, I do not pack them at all. I have not used any packing for the last 200 operations I have performed. This includes several that were done while on the house staff of the New York Eye and Ear Infirmary.

Dr. Patton uses a clamp which causes very little reaction. After the operation I apply a solution of 95 per cent. alcohol between the flaps and the outside, and always make a horizontal incision along the floor of the side of the incision. I have had one hematoma and very few complications of any importance with this method. The patients have very little pain or swelling. They sleep that night and rest very well. There is no more hemorrhage than occurred with packing.

I think Dr. Patton's method of not treating the nose after the operation is also a very important point. The less you do after the operation the better. I hardly ever spray the nose until the third or fourth day after the operation, when both sides are well open.

A Member.—I think the most important step is necessarily just at the beginning of the operation. If you begin your operation properly you will have no trouble in the subsequent steps, and you must have a good exposure if you are not to tear the membranes. The cartilage is, in a great number of these cases, almost across the nostril, so that you can go back and separate from the nostril portions forward, but must work from before, backward. The incision which I saw Dr. Freelight do in New York I have followed for the past two years. That incision is started well up, high, and about a quarter of an inch beyond the vestibule, is brought down, coming across into the vestibule about half way along to the floor. You are then into the vestibule, and when you reach the bony tissue you move an outside tissue with the point of your knife, so that you cut well down and cut a third of the way across the floor. Be careful in your elevation (be sure that you are next the cartilage) and elevate back for a third of an inch down to the spur. Then elevate with the flat instrument.

Freelight has also gotten up, beneath the whole structure, to the edge of the ridge. You only have to break the fibres at the ridge and work your way back and take out as much of the twisted cartilage as possible. The whole point is, if you try this incision, you have a large opening to work through and will not tear your membranes.

Dr. W. Likely Simpson, Memphis, Tenn.—I believe the complication we all dread is that of perforation, and I think we ought to know if we are getting a perforation at the time we do the operation. I have never seen a perforation late which I did not know was present at the time of the operation. The way to prevent that complication is to insert a large piece of the cartilage between the mucous membrane flaps. There is really not any excuse for a perforation becoming permanent, unless a very large tear in the mucous membrane is made, if one inserts a piece of cartilage between the flaps.

A Member.—I want to preface my remarks by saying that I had a submucous done on myself, and I know how the other fellow feels. There is no pain about it that anybody needs dread, but the packing is very disagreeable. Now that is personal experience, and I want to urge these gentlemen who are doing this work to try to work out some way to get rid of that packing.

The best thing, I consider, is Whiteridge's varnish. Freelight put this in. It is an antiseptic varnish and it was devised for the purpose of using for operations of the tongue, where, for instance, after the tongue is removed it is painted over with this. At the same time it is hemostatic. They do not bleed any more with it upon the applicator than any flaps pressed together a moment.

I doubt very much that all cases do so well as that after the packing. After the packing is removed certainly some of them have less hope of clearing up quickly than cases without packing and varnish. If any of you have ever had your nostrils packed twenty-four hours, you will be in accord with my efforts to avoid packing.

Dr. John H. Foster, Houston, Tex.—I have not packed a nose in two years for any condition and my patients have certainly done better than they did with packing. I do not believe that any of you will go back to packing after dispensing with it in a sufficiently large number of cases to give it a fair trial. I know that most of you feel just as I did when I first tried it. I was afraid of hemorrhage and was very careful to have the cases in a hospital under careful observation. But today I do not pack even if the patient is going home. I do not believe that there is any more bleeding than with packing and there is certainly less headache and reaction. Patients do not complain of taking cold so much as they do with packing or have the other unpleasant results from the retention of infected material from the nose.

A Member.—How long do you keep them in the hospital?

Dr. Foster.—As a rule, twenty-four hours.

Dr. M. Pennington, Mt. Vernon, Ky.—I agree with Dr. Simpson about perforation. I think where two surfaces have been parted, and two pieces of cartilage mend within a perforation, it

will be absorbed in a short time. Having tried that on a few occasions, I think you will find that to be a fact.

Also, in regard to packing, I am heartily in favor of packing. I have had probably 124 cases with and 125 cases without packing, and I think the former got along much better. And you can be rid of your patient usually after two or three visits to your office with packing, where, if you do not pack, when the mucous membrane will be swollen, you will have to apply clamps in the nose and clean them out and pack them.

So far as hemorrhage is concerned, you have as much one way as the other. That has been my experience.

Dr. Foster has had unusually good luck in not having had hematomas. I think I have had 7 or 8% of hematomas. That is unusually high, I think.

Dr. Patton (closing).—In presenting my paper this morning it was necessary that I read very rapidly in order to finish in the allotted time. I fear there were several points not fully understood. In regard to the anesthetic, I believe it is necessary to apply cocaine locally, because it shrinks all the soft tissues and gives you more room and better view. After this preliminary application of cocaine, I prefer injection of novocaine for the following reasons: It gives better anesthesia, is quicker, thickens the membranes and makes separation easier. If we are lucky in first placing the needle between the pericondrium and cartilage, we can often separate the membrane by hydraulic pressure, so to speak.

There are probably more instruments on the market for the submucous operation than for any other single operation. The more submucous work we do the fewer instruments we find we need. If the table is full of unnecessary instruments, we spend more time looking for just the proper ones for each step than we do in operating. I seldom use more than seven or eight instruments.

In regard to replacing the cartilage for prevention of perforation, it is true the cartilage is absorbed after some time. However, in that time the membranes have had time to heal and perforation is prevented. I have replaced cartilage a number of times and never had a perforation following this precaution.

We are often called upon to relieve nasal obstruction in patients under fourteen years of age, due to deformed septums. We then have choice of two methods,—one of the crushing operations such as the Ash, or, what I prefer, the removal of a small strip of cartilage along the floor which gives the septum room to fall back into the natural position, and then have the teeth properly separated so as to lower and broaden the arch.

Now, in regard to packing, this subject could be discussed pro and con indefinitely. Some men claim good results without packing; others better with it. Personally, I never have been successful without some kind of packing. In all the cases where packing has been left out I have either had to pack for hemorrhage or had to treat a hematoma between the flaps.

With the clamp I have shown the patient breathes through the nostrils freely. There is very little danger of causing sinusitis or middle ear trouble; the flaps are held in easy approximation; there is less hemorrhage; and last, but not least, certainly there is less headache and the patient is in every way more comfortable.

AUTHORS' ABSTRACTS

Surgery, Gynecology, Obstetrics and Genito-Urinary Diseases

(Continued from page 248)

Fatal Complications of Percy's "Cold Iron" Method in the Treatment of Inoperable Carcinoma of the Cervix. V. N. Leonard, New York, N. Y., and A. B. Dayton, Baltimore, Md. Surgery, Gynecology and Obstetrics, Vol. XXIV, No. 2, February, 1917, p. 156.

The prolonged treatment of large carcinomatous masses by low heat may result in a rapidly fatal outcome with lesions similar to those in cases of fatal cutaneous burns, such as, the pathological changes in this case,—pulmonary edema, hemorrhagic serous effusions, extreme cloudy swelling of the viscera, renal epithelial necrosis, and gastric ulcers.

The necrotic mass produced by the cautery forms a particularly favorable medium for bacterial growth. The organisms may spread to the surrounding tissues or reach the general circulation through the local thrombosed vessels. It seems probable that the greatest danger in the application of the Percy cautery is a local infection and a subsequent general sepsis.

Finally, the technique is ineffectual in eradicating the carcinoma. There is no evidence from these two cases that carcinoma is more susceptible to heat than is normal tissue.

Railway and Army Surgery—A Comparison. Evan O'Neill Kane, Kane, Pa., International Journal of Surgery, December, 1916, p. 390.

Railway surgeons can derive valuable information from a study of military surgery of the present European War. The host of cripples resulting from it owe their lives and remnant of usefulness to the army-surgeon, who in turn owes much to the railway surgeon.

Surgery of battlefield and army hospitals is conducted on much the same principles as that of the railway. Both call for prompt action, resourcefulness and disregard of personal comfort or safety. Surgeons in both cases owe fealty to a governing control, which controlling agencies are contrasted, showing military leaders to be engaged in the work of devastating and retarding civilization, and railroad companies in constructing and promoting progress.

Contrast of nature of the wounds and the character of the men treated in the two classes of cases shows the superiority of physical condition of the railway employee over that of the soldier which enables him to better endure nervous strain. While in both instances the wounds are chiefly of the mangled and bruised variety, the metallic foreign bodies so common in war are rare in railroad injuries. Crushing wounds of all kinds are frequent among railway employees, but not in war.

The sanitary conditions among railroad subjects are superior to those encountered on the battlefield and in military hospitals. The convalescence of railroad cases is accomplished under more favorable conditions and with more cheerful prospects for the future.

The Diagnosis of Cancer of the Breast. Chas. Stanley White, Washington, D. C. Virginia Medical Semi-Monthly, Jan. 12, 1917, p. 472.

The usual diagnosis of carcinoma of the breast is made entirely too late to expect the best results from an operation. No single symptom is reliable in the incipiency of carcinoma of the breast, and the diagnosis must be made by the pathologist at the time of operation and by the use of the freezing microtome. The objection to the frozen section on the ground of inaccuracy is not well founded, as it is equally as trustworthy as the slower celloidin method of preparation. The X-ray should be employed before operation to detect the presence of pulmonary or osseous metastases, and subsequent to operation for its tendency to inhibit or destroy carcinomatous tissue.

Clinical Considerations of the Cancer Problem. George W. Crile, Cleveland, Ohio. International Journal of Surgery, Vol. XXX, No. 1, January, 1917, p. 1.

This paper is based upon a study of 2,287 histories of cases of malignant tumors, surgically treated. Cancer, whether of the external or internal parts, follows a general law of growth and is preceded by a pre-cancerous condition, which is nearly always remediable. However, if this stage is passed, the cancer cells quickly divide and establish new colonies, thereby involving neighboring tissues.

The Abderhalden reaction and hemolysis are of value in confirming a diagnosis of malignancy, but the best diagnostic aid in cases beyond the reach of the hand or eye is the X-ray. However, a loss of weight, gradual and slow at first, but steadily increasing, strongly suggests cancer. If there is associated with this weight-loss a change in the size or consistency of an ulcer or benign tumor, the diagnosis is practically certain.

As a result of educational propaganda for cancer control, patients are presenting themselves for treatment at earlier stages of the disease. However, in those cases where the patient is much weakened, the operation is performed in two stages. This is especially true of operations for cancer of the larynx, the tongue, the stomach, the rectum, and often cancer of the large intestine and of the uterus.

Since in bad-risk patients nutrition is at a low ebb, and acidosis is present or impending, nourishment and water are given in large quantities and alkalies are administered. Rest is induced and sleep is produced by natural or artificial means.

Not only the local growth, but every possible regional focus is excised, precaution being taken to avoid reimplantation of cancer cells. In suitable cases the cautery is used to make a penetrating coagulation of protoplasm, which is a barrier against an extension of the cancer.

So far no cure for cancer has been discovered, and until one is found the disease can be conquered only by closest "team work" of layman, internist and surgeon.

The Action of Several of the "Female Remedies" on Strips of the Excised Human Uterus. J. D. Pilcher, Omaha, Neb., The Archives of Internal Medicine, Vol. 19, No. 1, January 15, 1917, p. 53.

Unicorn root (aletris farinosa), pulsatilla and oil of valerian depress the activity of strips of the human uterus; blue cohosh (caulophyllum thalictroides) put the strips into tonic contraction, while viburnum prunifoliun and blessed thistle (cnicus benedictus) were without action. It is not conceivable that a patient could tolerate doses sufficient to produce the same concentration of these drugs in the body as were necessary to give the results obtained on excised strips of the human uterus. The results were quite similar to those obtained on strips of the guinea-pig uterus and for that reason but few of the so-called "female remedies" were tested on segments of the human uterus.

Explosives,—Industry Poisons. W. G. Hudson, Wilmington, Del. Medical Record, January 20, 1917, p. 89.

The older chemicals capable of poisonous effects are first reviewed. Nitro-glycerine, whose effects are well known, and poisoning from the inhalation of nitrous fumes which cause pulmonary edema are the chief ones. Preventive measures are discussed, as well as the methods of dealing with the burns from the strong acids used in this industry.

The simple chemistry underlying explosive manufacture is reviewed in a manner readily understood by any physician.

Black powder manufacture, many of whose operations are dusty, nevertheless seems to give little trouble that might be expected from the inhalation of dust.

The poisonous effects of substances new to the industry, like nitro-aromatics and their derivatives of various kinds, are then taken up. They act as hemolytic agents and sometimes also cause a malignant type of jaundice. The clinical symptoms are given, as well as the methods that have been found effective in prophylaxis and treatment. Some of these substances also produce a severe chemical dermatitis. Ordinary remedies are efficacious if there is no further exposure.

Fulminate of mercury manufacture occasionally subjects a workman to poisonous fumes, mainly ethyl nitrite. The condition is promptly relieved by oxygen and exercise. There is scarcely any trouble due to mercurial poisoning in the manufacture of this explosive.

Suggestions are made for applying to therapeutic use the observed effects of the different poisons encountered.

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EDITORIAL DEPARTMENT

THE GREAT WAR'S CONTRIBUTION TO SURGERY

Whatever may be the justification of the claim that the European war has set civilization back a hundred years or more, it surely cannot be denied that it has been the means of stimulating surgery to no small degree. The unprecedented supply of injuries plus the service of many of the world's greatest scientists and surgeons form a peculiarly happy combination for results.

It seems to have been proven that, in warfare at least, first aid is a dismal failure and that battle-field surgery is of little avail. Plastic surgery, particularly of the face, has made rapid strides. But the really great contributions to surgery have been the advances made in the treatment of wounds and infections, and it is this phase of the subject of which we wish to speak.

THE IDEAL ANTISEPTIC

All along the effort has been to find some antiseptic which would be germicidal, nontoxic, non-destructive to the phagocytes, non-irritative to the skin and other tissues, but which would be active in serum and various other discharges, would stimulate granulations and would be cheap. Heretofore there has been no such substance forthcoming; for those which would fill one or more requirements could not qualify in certain other respects. Agents which would kill micro-organisms would invariably prove to be protoplasmic poisons as well.

Abundant opportunity has been found for trying out the hypertonic salt solution advocated by an American, James Homer Wright, the principle involved being that the tissues will be flushed by the lymphagogic action, and that the infected area can thus be kept cleaner. While Wright's solution still has its warm advocates, it cannot be denied that this forced flow from the wound may also deprive the tissue of many of its protective elements, and that their loss may be of equal severity to that experienced formerly when infected abdominal cavities were irrigated at operation. The best that can be said of the latter cases is that some of them recovered. As for Wright's solution, it is not germicidal and hence strictly speaking cannot be termed an antiseptic.

DAKIN'S SOLUTION

One of the most valuable contributions of the whole period of the war has been the introduction of hypochlorite in neutral solution for the treatment of wounds, and especially of infections. Carrel and Dakin after experimenting with various substances for two years finally worked out the present technique.[1] Reports from abroad of the use of this solution are most encouraging, and the reason more favorable results have not been met with in all American literature is thought to be due either to the use of the faulty formula first published in this country or to poor technique.

According to Noland infected wounds of all sorts and stages are treated by dressings constantly soaked in the solution and by instillation tubes placed in cavities and through which is run the solution at two-hour intervals to insure the tissue's becom-

1. Noland, Lloyd: "The Carrel Method of Wound Sterilization." Southern Medical Journal, Vol. IX, No. 12, December, 1916, pp. 1056-1062.

ing constantly bathed by the substance. Carrel has smears made from the wounds every second day, and when they show an average in five fields of only one microorganism for each field for two successive days, the wound is considered ready for surgical closure. The average duration of treatment before this could be done at Hospital Militaire No. 21, at Compiegne, was about fourteen days.

To further strengthen its claim we might cite the work of Bond[2], who experimented with various antiseptics in wounds and noted their effect upon phagocytosis, by placing sterile rice starch in the wounds and observing whether or not the particles were picked up by the white cells and in what numbers. He found that while other agents employed were inhibitory to the phagocytes, Dakin's solution offered little or no interference.

However, lest the reader should receive the impression that no failures are encountered, we must disillusion him, for it must be admitted that there are cases in which it seems to be without effect. At any rate this is so in America. Moreover, it must be stated that Dakin's solution often proves irritative to the skin of many people, and is therefore best used with vaseline coating the surrounding skin. The above disadvantage, plus the fact that its preparation is difficult, that it is not apt to be stable longer than about two months, that its expense is rather great considering the amount which is needed, and that it cannot be used with heat, render it anything but an ideal dressing, though its many advantages cannot be questioned. A further objection to Dakin's solution is the fact demonstrated by Lambert[3] that it follows the rule of many antiseptics in dissolving the fibrin in wounds, and thus delaying the healing process. Of course this delay is only relative, as the sum total of good from the use of Dakin's solution far exceeds its few disadvantages.

2. Bond, C. J.: "The Influence of Antiseptics on the Activities of Leucocytes and on the Healing of Wounds." British Medical Journal, No. 2921, December 23, 1916, p. 861.

3. Lambert: Journal Experimental Medicine, December, 1916.

FLAVINE AND BRILLIANT GREEN

Although Bender prepared flavine (diamino-methyl-acridinium-chlorid) for Ehrlich, in 1912, and it was then called trypaflavine on account of its decided therapeutic action upon trypanosomes, it was not until the present war that its use in the treatment of wounds was discovered. Brilliant green belongs to the diaminotriphenyl-methane group.

Browning, Gulbransen, Kennaway and Thornton[4] have done a laborious and excellent piece of work in comparing the principal antiseptics in common use and some which are only theoretically useful. They include phenol, bichlorid of mercury, iodin, hypochlorites (eusol and also Daufresne's modification of Dakin's solution), chlorin water, malachite green, brilliant green, crystal violet, ethyl violet and flavine. They tested the germicidal power in the presence of serum and also the inhibitory effect upon phagocytosis and found everything in favor of flavine and brilliant green, with a slight preference for the former. Serum actually seems to increase the potency of flavine.

These investigators say: "Thus carbolic acid kills organisms and inhibits phagocytosis at a concentration of 1:250 to 1:500 and mercury perchlorid exerts both effects at 1:7,000 to 1:10,000. On the other hand, brilliant green kills cocci at 1:30,000 and only inhibits phagocytosis at 1:2,000. Finally, flavine kills both cocci and B. coli at a concentration of 1:100,000, whereas in order to effect phagocytosis a concentration greater than 1:500 is required."

The method of treatment is to incise

4. Browning, Gulbransen, Kennaway and Thornton: British Medical Journal, No. 2925, January 20, 1917, p. 73.

freely an infected wound, syringe or swab out with a 1:1,000 sol. of flavine or brilliant green in 0.8 % NaCl, cover with sponges soaked in the solution, and over this place a "protective" and dressing to prevent evaporation. This is done twice a day.

Granulations are said to be abundant, to begin as early as forty-eight hours, to be dark red in the case of brilliant green, and light pink for flavine, to be firm and not to bleed easily[5].

As to their toxicity, 300 c. c. has been injected intravenously into man without harm, and smaller amounts have been injected prophylactically into tissues about wounds.

About 400 cases have been reported in the literature, the claim being that the substances are highly germicidal, non-toxic, non-irritative to the skin, and that they clear up an infection in one-half the usual time, the average being about twelve days. Thus, if these claims can be verified, it would seem that flavine and brilliant green come nearer being ideal antiseptics than anything else at present known.

THE PARAFFIN TREATMENT OF BURNS

While it may be rather premature to make any definite report upon the use of Ambrine in the treatment of burns, the daily press has seized upon its claims and so popularized them that some mention must be made of it. The *Medical Record*[6] has recently contained several accounts of the therapeutics of this substance.

It seems that Ambrine derives its name from its amber color and that it consists of a physical compound of paraffin and resin. Its formula was devised by a French surgeon named Barthe de Sanfort, in 1904, is a secret one and is manufactured by a Parisian firm. It is a solid with a melting point of 50°C. and is capable of being sterilized by boiling.

The technique of its use is as follows: The material is broken into small pieces and heated to 125°C. (257°F.), then cooled to 70°C. (158°F.), and applied in a thin film over the burned surface by means of a brush or spray. Over this a thin layer of cotton is applied and allowed to cool. Thus several strata are formed. The application is made without pain. In twenty-four hours the dressing is removed in one piece, whereupon it is not uncommon to find an accumulation of pus; but no harm comes of it. Then the wound is cleansed with sterile water and another similar dressing is applied. The reports of upward of 300 military cases are very encouraging.

In this connection it is interesting to compare this idea with the popular and very successful treatment of burns in America with the so-called open-air method, which is its very antithesis. The value of the Ambrine seems to be the exclusion of air, the prevention of adhering of dressings, plus the poultice-like effect.

The danger of tetanus from sealing up infected burns would naturally occur to one, were it not borne in mind that all cases of military wounds are given prophylactic injections of tetanus antitoxin as a routine measure.

This method of treatment is said to lessen pain considerably, to promote granulations with rapidity and to exert a very favorable influence upon epitheliazation, so that extensive burns are not infrequently healed without the necessity of resorting to skin graft.

OTHER PARAFFIN PREPARATIONS FOR BURNS

The marked success achieved by Ambrine led surgeons to experiment with other preparations of paraffin. Ambrine being a proprietary remedy, is expensive. Its dressings moreover have an offensive odor. In some infected burn cases it is

5. Ligat, D.: "Flavine and Brilliant Green in the Treatment of Wounds." British Medical Journal, No. 2925, January 20, 1917, p. 18.
6. Medical Record, Vol. XC, No. 27, December 30, 1916, p. 1160, and Vol. XIC. No. 4, January 27, 1917, p. 159.

necessary to substitute for it another paraffin preparation containing an antiseptic.

Therefore, Hull[7] and others sought to discover a satisfactory substitute for Ambrine. Hard paraffin was found to lack flexibility and adhesiveness, for it cracked easily and fell off the dressing. In other words, its melting point is higher than that of Ambrine. But Hull finally found that he could lower the melting point of ordinary parffin 2°C. and render it perfectly acceptable as a dressing by subjecting it to 130°C. with superheated steam. Its physical properties then resembled Ambrine to such an extent that the two would seem to be identical save for certain minor differences accounted for by the presence of resin and other unimportant accessories. He gives two formulae. The first is:

Resorcin	1 per cent.
Eucalyptus	2 per cent.
Olive oil	5 per cent.
Paraffin molle	25 per cent.
Paraffin durum	67 per cent.

The paraffin durum is to be melted, and to it should be added the paraffin molle and olive oil. The resorcin is dissolved in absolute alcohol (soluble 2 in 1). This is added and then the eucalyptus when the mixture has cooled to 55°C.

His other formula he says is equally efficacious and is cheaper:

Beta naphthol	0.25 per cent.
Eucalyptus	2.00 per cent.
Olive oil	5.00 per cent.
Paraffin molle	25.00 per cent.
Paraffin durum	67.75 per cent.

There is said to be seldom any pain after the first application, and even deep sloughs separate readily and form healthy granulations. Hull claims the results are even superior to those of Ambrine. In his hands burns of the extensor surfaces of limbs have healed without scarring, and those of the face have healed with the formation of healthy-looking skin.

7. Hull, A. J.: "The Treatment of Burns by Paraffin." British Medical Journal, No. 2924, January 13, 1917.

CONCLUSIONS

That the European war has been a great stimulus to surgery cannot be denied. In the treatment of wounds in particular the greatest advances have been made. The distinct value of Dakin's solution in France has been conclusively confirmed in America. The scientific details of the careful laboratory experiments with flavine and brilliant green, together with the large number of confirmatory case reports of British surgeons, and the accounts of the successes of the paraffin preparations in France and England lead us to believe that they also represent distinct advances in the efficient management of wounds.

There is ample apportunity among American doctors to try out these remedies, and the results of their experiences will be awaited with much interest.

THE GENERAL DEATH RATE NOT REALLY REDUCED.

Within a quarter of a century the number of deaths of infants per thousand annually has been reduced 50%, that from tuberculosis 25%, and from typhoid fever 55%, while the epidemics that used to sweep away thousands have ceased to be considered. Granting the above premises it is natural to infer that the number of human beings dying annually in each one hundred thousand must have materially decreased. Statistics, however, show but little diminution in the total death rate. Such being the case, there must be a material increase in the fatality of some of the diseases not noted above to account for the slight decrease in the general death rate.

It requires but little investigation to find records of increased fatality in several diseases. Foremost among these are Bright's disease, cancer and other malignant growths, and especially heart disease. Apoplexy is also becoming increasingly frequent. The augmentation of fa-

talities from these diseases goes far to explain the fact that the general death rate does not decrease, and it is only proper seriously to consider whether something may not be done to improve conditions.

The success of the united and systematic efforts to reduce the incidence of tuberculosis, typhoid fever and the diarrheal diseases of infancy, through the application of the laws of hygiene, and the suppression of uncinariasis by the well directed application of proper therapeutics, together with the war on earth pollution, have demonstrated the efficiency of properly conducted measures for the amelioration of disease conditions, and it is time those measures were so expanded as to include at least Bright's disease and the diseases and disorders of the heart and arteries, if the life span of life of adult humanity is to be lengthened.

Men of great wealth could serve their race effectually by supporting commissions of competent workers while they sought, armed with the advantages of modern appliances, the causes of these diseases and the means for their prevention.

HYSTERICAL DISINFECTION.

A Florida newspaper recently published a thorough editorial with the above heading. It spoke of the unreasoning fear that has been fostered by the general press, especially regarding tuberculosis. It is undoubtedly true that too much importance is being ascribed to disinfection, when urging sanitation would be more to the purpose. The extent to which popular judgment may be misled by the press is amazing.

The fear of tuberculosis has been developed to a public obsession. It causes communities to quarantine against it as though it were bubonic plague and to inflict hardships that are entirely unnecessary upon unfortunate victims of the disease, even to the extent of refusing them temporary hotel accommodations. It encourages the profuse and wasteful use of such powerful agents as formaldehyde, the fumes of sulphur, and carbolic acid. It leads to saturating the atmosphere with their evil odors in the delusion that such smells insure disinfection, when the truth is that there is no germicide that can saturate the atmosphere sufficiently to destroy germ life without also being fatal to any animal that might breathe it. Therefore, however strong a room might smell of carbolic acid, if it is possible for a human being to remain in it, it is harmless to germs. Worse than all, the prevailing orgie of disinfection leads to a general neglect of nature's surest disinfectants — direct sunshine and an abundance of pure, fresh air.

No tubercle bacillus can live an hour exposed to them, unless protected by abundant moisture. If blown about in the shape of dust that has been exposed to sunlight it is dry and dead. To insure the safety of rooms that have been occupied by consumptives only the ordinary measures of good housekeeping are required. Everything washable should be boiled and laundered. Mattresses and bedding should be sunned for several successive days, both sides receiving the direct rays. Ordinary cleansing of the floor and brushing of the walls, followed by complete exposure to the direct rays of the sun for several successive days, will insure absolute safety. The trouble, expense and unhealthfulness of saturating the house with evil smells will be avoided. In other words, there will be no "hysterical disinfection."

THE GOVERNOR OF NORTH CAROLINA ON PATENT MEDICINES

Perhaps the most widely quoted saying of any governor in history fell from the lips of the governor of North Carolina

when he said to the governor of South Carolina, "It's a long time between drinks." Years have passed and times have changed since this bibulous governor gave to thirsty men the excuse for another cup of what in the olden days was supposed to cheer. Now there comes a modern, progressive governor with a different vision, who desires to extend the time between drinks by controlling the sale of patent medicines in "bone dry" North Carolina.

The alcohol question, however, seems not to have been considered by Governor Bickett when, in his inaugural address, he gave utterance to words that should be quoted by every governor and every man in public life in America until the patent medicine submarines have been driven out of the commercial sea.

North Carolina's "good health governor" devoted a large part of his first public address as chief executive toward advocating measures that would conserve the health of his people, including the employment of whole-time health officers in every county in his state. He rightly places the sale of patent medicines as an evil that affects the welfare of the public and one which should be restricted to legitimate methods. It required courage and broad statesmanship for a man to take such a stand, when he must have realized that he was lining up against him the rich, powerful and unscrupulous patent medicine interest. Yet Governor Bickett said:

"The State Board of Health deserves the unqualified support of the General Assembly in its campaign against quacks and quackery. The law requires a man to have a diploma from a first class medical college, and to stand a rigid examination before the North Carolina Board of Medical Examiners before he is allowed to write a single prescription for a patient in North Carolina. And yet we permit the sale of nostrums to our people without any adequate knowledge of whether or not they are injurious to health, or have any medicinal value whatever.

"I am in favor of a law making it a felony for any man to sell, offer for sale or advertise for sale in North Carolina any proprietary or patent medicine purporting to cure cancer, consumption, diabetes, paralysis, epilepsy, Bright's disease, or any other disease for which the North Carolina Medical Association and the American Medical Association declare that no cure has been discovered.

"I am earnestly in favor of a law requiring all vendors of proprietary medicine to file with the State Board of Health a statement showing the exact composition of such medicines, and that the State Board be empowered to forbid the sale of such proprietary medicines in the state of North Carolina, if in its opinion it is without curative value in the treatment of the disease it purports to cure.

"A bill is being prepared by our Health Department that will deal fully and adequately with this subject, and I give to this bill my most emphatic endorsement."*

The average layman believes that the medical profession is against patent medicines because they are supposed to "take money out of the doctors' pockets." In reality patent nostrums never cure, but the alcohol, caffeine, morphine, cocaine or other stimulant or narcotic which they contain sometimes make the victim feel better temporarily; and he, or more often she, buys the second and in many instances the hundredth bottle, thus enriching the soulless manufacturer while the disease progresses. And when the doctor or surgeon is called in the treatment must necessarily be prolonged, more difficult and of course the fee is larger. The reasons why physicians are opposed to patent medicines are because they know what outrageous frauds they are and they feel it their duty to protect the public.

It is splendid to see a public man recognize the fact that the medical profession knows the remedy and can be depended upon to apply it for protecting a long-suffering public from an industry that preys upon the credulity and gullibility of the ignorant and ill-informed. North Carolina has a great governor, one who is a credit to his state and to the Nation.

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*As the Journal goes to press information has been received that a bill embodying all the suggestions of Governor Bickett has passed both houses of the North Carolina Legislature and has become a law. The State Board of Health can be depended upon to protect the people from fraudulent nostrums. Splendid for the "old North State."

With similar laws in force in Louisiana and Kentucky, with a like bill pending before the

Texas Legislature, and with the enforcement of the Harrison and other Federal statutes, the patent medicine octopus is finding life anything but "a long happy dream."

MEMPHIS PLANS

On February 6, Dr. Duncan Eve, President, with Dr. Seale Harris, Secretary, and Mr. C. P. Loranz, Business Manager of the Southern Medical Association, at the invitation of Dr. William Britt Burns, President of the Shelby County Medical Society, visited Memphis to discuss plans for the November meeting. Memphis has always been a stronghold for the Southern Medical Association, and the enthusiasm already manifested by the local doctors there over the prospect of having as their guests the physicians of the South augurs well for the success of the November gathering.

Memphis is a city of splendid hotels, magnificent public buildings, modern hospitals and everything else in keeping with them, including a "Class A" medical school, that is needed for a successful convention of 2,000 doctors. And apparently the physicians in that progressive city of more than 200,000 population can, and intend to, commandeer whatever is desired to add to the attractions of the occasion.

The meeting of the Shelby County Medical Society, at which were gathered a hundred or more of the Memphis profession, was given over entirely to the discussion of plans for the November meeting. President Duncan Eve made an eloquent address, in which he stated that the Southern Medical Association would be the guests, not only of the city of Memphis, but of the state of Tennessee, and that the medical profession of the entire state would be in and with Memphis in November to greet their brother physicians from the sixteen Southern states.

The Secretary stated that the Association had been entertained too lavishly at previous times, and that in the future the work of the scientific sections must not be interfered with by social functions. He said that the men who attend the annual sessions of the Southern Medical Association go for the benefit that they derive from the papers, discussions and clinics, and from mingling with their medical friends; and consequently that many object to too much entertainment. He said he believed he expressed the sentiment of the majority of those who attend the meetings in saying that the entertainments should be limited to a reception on Tuesday evening and perhaps an informal gathering on Monday night after the public health addresses. He thought that Wednesday evening should be given over to alumni and section dinners, to be paid for by those who participate in them.

Mr. Loranz spoke briefly, saying that he thought Memphis was amply able to take care of the convention—that he was the "original" Memphis man.

Dr. Frank Jones, an honored ex-President of the Southern Medical Association, made an eloquent talk on the welcome and the entertainment that Memphis would prepare for the doctors.

The selection of Dr. E. C. Ellett as General Chairman was received with an approval so hearty that it is certain he will have the co-operation of the united medical profession of the city of Memphis and Shelby county.

The plans discussed at Memphis in February presage for the 1917 convention a delightful occasion socially and a most successful meeting from the scientific viewpoint, with the largest attendance in the history of the Southern Medical Association.

THE AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS

The following announcement sent out by Dr. E. C. Ellett of Memphis will be of interest to physicians practicing the special-

ties of ophthalmology and oto-laryngology.

The American Board for Ophthalmic Examinations held its first examination in Memphis on December 12th and 13th, 1916. The Board is composed of representatives of the American Ophthalmologist Society, the American Academy of Ophthalmology and Oto-Laryngology, and the Section on Ophthalmology of the American Medical Assocaition, and is for the purpose of examining into and certifying to the qualifications of those desiring to practice Ophthalmology. Detailed information is being sent out to all Ophthalmologists, and it is hoped that all who are qualified to receive the endorsement of the Board will apply for and receive the certificate. To those whose record, standing and years of service justify it, the certificate will be issued without examination, while others will be asked to submit to a test. The examination includes the submission of case histories, to be followed by a written and practical examination covering all the subjects in which an Ophthalmologist should be versed. The next examination will be held in New York City, preceding the meeting of the American Medical Association. It will be a source of pride in the future that the work of this Board was begun in our section of the country, and that the first licentiates were our fellow practitioners. The Secretary of the Board is Dr. F. C. Todd, Donaldson Building, Minneapolis, Minn.

PRACTICAL CLINICAL LABORATORY DIAGNOSIS*

No man in America is better known for his research work than Charles C. Bass, Professor of Experimental Medicine and Director of the Laboratories of Clinical Medicine in Tulane University. The first medal given by the Southern Medical Association for "meritorious and original research work" was to Dr. Bass for growing the plasmodium of malaria in artificial media. The American Medical Association has also recognized his work by giving him a medal. Dr. Bass is also well known as an efficiency expert in clinical diagnosis, and he, with the collaboration of Dr. Foster M. Johns, Instructor in the Laboratores of Clinical Medicine in Tulane University, have given to the laboratory worker, whether the whole-time man or the general practitioner who does his own laboratory work, the best and most practical book yet published. Those who have had the privilege of working with, or under, Dr. Bass say that he "has more 'stunts' and 'short cuts' which simplify and save time in laboratory technic than any man in the world," and he seems to have described all of them in his book.

The plan of giving "only one method of making a test or examination" as followed by Bass and Johns is a great space saver; and they describe only the methods that they have tried out thoroughly and can therefore commend. The many illustrations add very great value to the book, which is also a work of art from the publisher's view point. The entire field of clinical laboratory methods is covered but the chapters on malaria, hook-worm and other intestinal parasites, are of such value that the laboratory worker in the South will find the book almost indispensible.

*Published by Rebman Company, New York. N. Y. Price $5.00.

MISCELLANEOUS

ARMY MEDICAL CORPS EXAMINATIONS

The Surgeon General of the Army announces that preliminary examinations for appointment of First Lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C."

The essential requirements to secure an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 32 years of age at the time of commission at the close of the Army Medical School, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as intern after graduation.

Graduate physicians who are serving their interneship and who meet the other requirements can be examined for appointment with the understanding that they will complete the required postgraduate hospital interneship before coming to the Army Medical School.

Those who qualify at their preliminary examination and complete their hospital interneship by July 1 will be ordered to the Army Medical School for the special session of the school commencing July 9. The regular session of the school will open on October 1.

In order to perfect all arrangements for the examination, applications should be completed at the earliest practicable date.

There are at present 230 vacancies in the Army Medical Corps.

After July 1 there will be 222 additional vacancies.

BOOK REVIEWS

A Practical Medical Dictionary

Of words used in medicine with their derivation, pronunciation, etc., by Thomas Lathrop Stedman, A. M., M. D., editor of the "Twentieth Century of Medicine," of the "Reference Handbook of Medical Sciences" and of the "Medical Record." Fourth revised edition. Illustrated. William Wood & Co., New York. 1916. Price, $4.50 net; $5.00 indexed.

This is a very complete work, including in addition to medical words, special terms used in dentistry, veterinary medicine, chemistry, botany, electricity and life insurance, also chemical and therapeutic information concerning the mineral springs of America and Europe. Among the many attractive features of this book are the comprehensive lists of synonyms. A dictionary is one of the most valuable aids to the study of medicine, and the book under review is one of the best of its kind.

The Treatment of Diabetes Mellitus

With observations upon the disease based upon one thousand cases. By Elliott P. Joslin, M. D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital, etc. Illustrated. Philadelphia and New York: Lea and Febiger. 1916.

This monograph of treatment marshals the facts gathered from close observation of a thousand diabetics and lets the "four hundred fatal cases tell their useful lessons to the six hundred living." The author considers the subject mainly from the point of view of treatment and accompanies the discussion by tables compiled from the wealth of material at his command.

Great stress is laid upon the starvation and dietary treatment introduced by Dr. F. M. Allen and the control of regime by laboratory and clinical observations is explained.

The work is concluded by a section on "Aids in the Practical Management of Diabetes Cases" and "Foods and Their Compositions." The extremely practical nature of the subject-matter is to be commended and renders the work especially adaptable to the needs of the general practitioner.

A Manual of Therapeutic Exercises and Massage.

Designed for the use of physicians, students and masseurs. By C. Herman Bucholz, M. D., Orthopedic Surgeon to out-patients, Director of the Medico-Mechanical and Hydrotherapeutic Departments of the Massachusetts General Hospital, Boston, assistant in Orthopedic Surgery, Harvard Medical School, etc. Illustrated with 87 engravings. Lea & Febiger. Philadelphia and New York. 1917.

[illegible] work, containing about [illegible] pages, is a long [illegible] of the general practitioner [illegible] exercise methods [illegible] overcoming a grossly neglected [illegible] misunderstood. It is very likely that [illegible] profession [illegible] of this valuable and [illegible] ness is largely responsible for the success of [illegible] cults of [illegible] healers." The technique of [illegible] medical [illegible] exercises are presented [illegible] and practical [illegible] and it read carefully will [illegible] the practitioner [illegible] more valuable service [illegible] patients.

The Practitioner's 1917 Visiting List. Philadelphia and New York: Lea & Febiger.

This small record book provides space for the listing of thirty patients per week, and the ruling is arranged in such a clever fashion that it is the work of a minute only to jot down points about the patient's account. In the first part of the book are tables of doses, medicines, incompatibilities, and a number of other scientific facts which should be of value to the practitioner.

The Medical Record Visiting List or Physician's Diary for 1917. Newly revised. William Wood & Co. New York.

This list contains spaces for the recording of memoranda concerning 60 patients weekly, arranged in a very convenient manner. The first 51 pages of the book are filled with scientific data likely to be of use in emergencies, such as obstetric calendar, dosage tables, solutions for cutaneous injection, poisons and their antidotes, etc. It should prove a very useful book in the hand of the practitioner.

Everybody Ahead; or Getting the Most Out of Life.

By Orison Swett Marden. Frank E. Morrison, Publisher, New York, N. Y.

The title does not suggest anything medical, yet this, the latest and perhaps best of Marden's "inspirational" books, is of interest to physicians, because they often feel the need of encouragement themselves; and they frequently have patients, friends and relatives who are not so efficient as they should be, and who may be helped on the road to health and success by reading a book that really tells one how to get the most out of life. Marden recognizes the influence of the mind over the body, and teaches healthy and inspirational habits of thought that are essential for a sound body.

The Psychology of Success would be a better title than "Everybody Ahead" for the very readable and helpful book that discusses "the foundations of success," "courage and self faith," "worry the success killer," and a dozen other topics in as many chapters. The reviewer has advised patients and friends to read "Every Man a King" and others of Marden's books. He now adds "Everybody Ahead" to the list.

A Manual of Chemistry

A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text Book specially Adapted for Students of Medicine, Pharmacy and Dentistry. By W. Simon, Ph.D., M.D., Late Professor of Chemistry College of P. & S. of Baltimore, and in the College of Dental Surgery, and Daniel Base, Ph. D., Professor of Chemistry, Maryland College of Pharmacy, Department of University of Maryland, Baltimore. Eleventh Edition, Thoroughly Revised. 448 pages. Illustrated. Philadelphia and New York: Lea & Febiger. 1916.

The extensive teaching experience of both authors has enabled them to produce a very practical text-book for students. The work is written especially to fill the needs of students of medicine, pharmacy and dentistry.

Outline of Physiology

By Edward Grover Jones, A.B., M.D., F.A.C.S., Professor of Surgery, Emory University (Atlanta Medical College); and Allen H. Bunce, A.B., M.D., Associate in Medicine, Emory University (Atlanta Medical College). Fourth Edition, Revised, with 373 pages and 111 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Cloth, $1.50.

As a compend of physiology this small volume thoroughly accomplishes its purpose.

A Practical Treatise on Disorders of the Sexual Function in the Male and Female

By Max Huhner, M.D., Chief of Clinic, Genito-Urinary Dept., Mount Sinai Hospital Dispensary, New York City; Formerly Attending Genito-Urinary Surgeon, Bellevue Hospital; Out Patient Dept., and Assistant Gynecologist, Mount Sinai Hospital Dispensary. 318 pages. Philadelphia: F. A. Davis Co., 1916. Cloth, $3.00.

We cannot too heartily recommend this work to the medical profession. The subject is one of the utmost importance and is one about which many physicians feel a profound ignorance. Dr. Huhner has produced a highly instructive book whose excellence deserves the attention of the entire profession.

Materia Medica and Therapeutics,

Vol. VIII, Series 1916. The Practical Medicine Series. By George F. Butler, Ph.G., A.M., M.D., Emeritus Professor of Therapeutics, Chicago College of Medicine and Surgery; and **Preventive Medicine**, by Wm. A. Evans, M.S., M.D., LL.D., Ph.D., Professor of Preventive Medicine, Northwestern University Medical School. Under the General Editorial Charge of Chas. L. Mix, A.M., M.D., Professor of Physical Diagnosis, Northwestern University Medical School. 382 pages. Illustrated. Chicago: The Year Book Pub. Co., 1916. Cloth, $1.50. Entire Series of ten volumes, $10.00.

The resume is carefully gotten up and offers a very satisfactory brief of the articles which have appeared of late.

The Eye, Ear, Nose and Throat,

Vol. III, Series 1916 of the Practical Medicine Series. By Casey A. Wood, C.M., M.D., D.C.L.; Albert H. Andrews, M.D., and George E. Shambaugh, M.D. Under the General Editorial Charge of Chas. L. Mix, A.M., M.D., Professor of Physical Diagnosis, Northwestern University Medical School. 376 pages, illustrated. Chicago: The Year Book Pub. Co., 1916. Cloth $1.50. Entire Series of ten volumes, $10.00.

A creditable summary of the important work published on the diseases of the eye, ear, nose and throat for the preceding year.

Obstetrics,

Vol. VII, Series 1916, Practical Medical Series. By Jos. B. DeLee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School, and Herbert M. Stowe, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School; Attending Gynecologist to Cook County Hospital. Under the General Editorial Charge of Chas. L. Mix, A.M., M.D., Professor of Physical Diagnosis, Northwestern University Medical School. 230 pages, illustrated. Chicago: The Year Book Pub. Co., 1916. Cloth, $1.35. Entire Series of ten volumes, $10.00.

The recent literature on obstetrical subjects is well reviewed.

The Operating Room

By Amy Armour Smith, R.N., Formerly Superintendent New Rochelle Hospital, New York; Superintendent of Nurses, S. R. Smith Infirmary, Staten Island, and at the Woman's Hospital of the State of New York. 12 mo. of 295 pages with 57 illustrations. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $1.50.

Medical literature contains several very excellent works by physicians on the subject of the operating room. These treatises give valuable information, including the needs of the surgeon for various operations, etc. But they are all written from the viewpoint of the doctor. On the other hand, in "The Operating Room," by Miss Amy A. Smith, the whole subject is discussed from the nurses' standpoint, and to them must needs prove invaluable. Miss Smith clearly shows by her writings that rare display of good judgment and philosophy that marks a leader among women. Her book not alone is filled with timely hints to the nurse regarding her operating room duties, but it also abounds in sane advice about hospital work in general, much of which would be most useful for a physician to know. It really represents the pearls of wisdom collected during a busy career of usefulness in the operating room and elsewhere amid hospital life.

BOOKS RECEIVED

Care of Patients Undergoing Gynecological and Abdominal Procedures, Before, During, and After Operation by E. E. Montgomery, M.D., Professor of Gynecology, Jefferson Medical College, Philadelphia. 12 mo., 149 pages, 61 illustrations. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $1.25.

A Manual of Nervous Diseases—By Irving J. Spear, M.D., Professor of Neurology, University of Maryland, Baltimore. 12 mo., 660 pages, 169 illustrations. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $2.75.

The Diseases of Infancy and Childhood For the Use of Students and Practitioners of Medicine. By L. Emmett Holt, M.D., Sc.D., LL.D., Professor of Diseases of Children, College of P. & S. (Columbia University), New York; Attending Physician, Babies' and Foundling Hospitals, New York; Corresponding Member of the Gesellschaft fuer innere Medizin und Kinderheilkunde, Vienna; and Honorary Member of the Gesellschaft fuer Kinderheilkunde, Germany; and John Howland, A.M., M.D., Professor of Pediatrics, Johns Hopkins University, Baltimore; Director, The Harriet Lane Home; Pediatrician-in-Chief, Johns Hopkins Hospital; Corresponding Member of the Gesellschaft fuer innere Medizin und Kinderheilkunde, Vienna. Seventh Edition, Fully Revised with 215 illustrations. New York and London: D. Appleton & Co., 1916. Cloth, $6.00.

Teacher's Guide for Blumgarten's Materia Medica For Nurses -By A. S. Blumgarten, M.D., New York: The Macmillan Co., 1916. Paper, $0.20.

Preventive Medicine and Hygiene—By Milton J. Rosenau, Professor of Preventive Medicine, Harvard; Director, School for Health Officers, Harvard University and the Mass. Inst. of Technology; Formerly Director, Hygienic Laboratory, U. S. Public Health Service, etc. With Chapters upon Sewage and Garbage, By George C. Whipple, Professor of Sanitary Engineering, Harvard; Vital Statistics, By John W. Trask, Asst: Surgeon-General, U.S.P.H.S.; and Mental Hygiene, By Thomas W. Salman, Medical Director, National Committee for Mental Hygiene, etc. Second Edition, Thoroughly Revised. 1986 pages, illustrated New York and London: D. Appleton & Co. Cloth, $6.00.

A Treatise on Diseases of the Skin –For the use of Advanced Students and Practitioners. By Henry Stelwagon, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Eighth Edition, Thoroughly Revised. Octavo, 1309 pages, 356 Text-illustrations, and 33 full-page colored and half-tone plates. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $6.50.

A Text-Book of General Bacteriology By Edwin O. Jordan, Ph.D., Professor of Bacteriology, University of Chicago and Rush Medical College. Fifth Edition, Thoroughly Revised. Octavo, 669 pages, fully illustrated. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $3.25.

A Text-Book on the Practice of Gynecology For Practitioners and Students By W. Easterly Ashton, M.D., LL.D., Professor of Gynecology, Graduate School of Medicine, University of Pennsylvania. Sixth Edition, Thoroughly Revised. Octavo, 1097 pages, 1052 original line drawings. Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $6.50.

Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes By Charles A. Elsberg, M.D., F.A.C.S., Professor of Clinical Surgery, New York University and Bellevue Hospital Medical College. Octavo, 330 pages, 158 illustrations Philadelphia and London: W. B. Saunders Co., 1916. Cloth, $5.00.

SOUTHERN MEDICAL NEWS

ALABAMA

At Tuscaloosa the Board of Revenue has granted the petition of the Board of Health and an extra appropriation has been made for the county health department.

At Mobile it has been announced that the study of military science and hygiene shall be added to the curriculum of the School of Medicine of the University of Alabama.

At Birmingham there were 180 cases of measles reported in January.

At Birmingham it has been announced that the sanitary sewer connections law, which has been sustained by the supreme court, will be rigidly enforced in that city.

At Mobile the city has appropriated the sum of $10,000 to be used in the remodeling of the operating ampitheater of the School of Medicine of the University of Alabama.

At Montgomery, during the recent state board examinations, twelve out of the twenty-two applicants examined were successful.

At Montgomery recently the visiting nurse system was installed by the Anti-Tuberculosis League, aided by an appropriation from the city.

At Mobile the physicians of the city failed recently in an effort to have the city commissioners adopt the flat license rate of $12.50 rather than the old schedule of $5.00 to $40.00.

At Mobile Rudolph Van Wolden, the diet specialist, who claims that he came to the city with a guarantee of $6,000 from thirteen persons desiring his treatment, was arrested for practicing medicine without a licens.

Dr. Stewart H. Welch, of Birmingham, offices in the Woodward building, has announced that he will limit his practice to diseases of children.

Dr. M. A. Maas, Selma, was married to Miss Beulah Housman, Shrewsbury, Pa., on November 23.

Deaths

Dr. James T. Rushin, aged 52, died at his home in Montgomery on January 6.

Dr. W. L. Noel, aged 68, died at his home in Boaz on November 23.

ARKANSAS

At Texarkana there was held the thirteenth annual meeting of the Tri-State Medical Society of Arkansas-Louisiana-Texas on December 19 and 20. The following officers were elected: President, Dr. J. M. Bodenheimer, Shreveport, La.; Vice-Presidents, Dr. T. F. Kitrell, Texarkana, Ark., Dr. T. E. Wright, Munroe, La., Dr. C. M. Rosser, Dallas, Tex.; secretary-treasurer, Dr. E. L. Beck, Dallas, Tex.; Secretary-Treasurer, Dr. E. L. Beck, Texarkana, Ark.; Councilors, Dr. L. H. Lanier, Dr. Nettie Kline, Texarkana, Tex. Shreveport was selected for the 1917 meeting.

Deaths

Dr. Jasper M. Stewart, aged 49, died at his home in McGehee, from cerebral hemorrhage, on January 18.

Dr. W. H. M. Pearson, aged 37, of Council, died on November 15 in Memphis, Tenn.

DISTRICT OF COLUMBIA

At Washington there has been a law passed regulating the practice of chiropody in the district.

At Washington, in the hope of preventing to some extent the spread of tuberculosis among the school children, a committee from the District Tuberculosis Association conferred with the School Commission regarding provisions for open-air school rooms in all school buildings to be erected in the future.

It has been reported that the Birth Control League, through its executive committee, will take steps toward introducing a bill into Congress which will legalize birth control in the District.

At Washington, the Board of Education has recently asked the public for a fund of $1,000 for the education of fifty-nine tuberculous children who have been excluded from the schools.

A convention of the Deans of the medical schools of the United States was held in Washington on January 6.

Deaths

Dr. Jesse H. Ramsburgh, aged 48, died suddenly at his office in Washington on January 2.

Dr. J. Ford Thompson, aged 79, died at a hospital in Washington on February 1.

Dr. Hamilton Wright, Washington, died at his home in that City on January 9. He had done work of note at home and abroad, his last public service being advisor in the framing of the Harrison anti-narcotic law.

Dr. J. H. Ramsburgh, Washington, died in the Emergency Hospital in that City on Jan. 2 at the age of 47 years.

FLORIDA

A stringent law has been recently passed in Florida greatly limiting the practice of drugless healers. It prohibits those, not holding medical licenses, from using the titles of "Dr.," "Doctor," "Professor," "M. D." and "Specialist." It also denies the right to examine, diagnose or prescribe, advise, recommend, administer for a fee or compensation, directly or indirectly, a drug, application, appliance, operation, manipulation or treatment of any nature for the treatment of a wound, fracture, bodily injury, infirmity, disorder or disease, mental or physical.

At Jacksonville a plan is being considered to move the tuberculous ward from the county hospital to the poor farm.

Dr. S. E. Driskell has moved from Alachua to Raiford, where he will assume the management of the medical department of the State Prison Farm.

Death

Dr. H. M. Boyd died at his home in Manatee on January 7 from carcinoma of the intestines.

(Continued on page 28)

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(Continued from page 272)

GEORGIA

At Atlanta the Georgia Surgeons Club will hold clinical meetings on May 28 and 29.

Dr. A. G. Fort, District Commissioner of Health of Irvin and Tift counties, whose resignation will take effect on March 1, will be succeeded in office by Dr. C. C. Whittle. An injury sustained while hunting is responsible for Dr. Fort's resignation.

At Macon there has been recently reported a widespread epidemic of measles.

At Atlanta W. B. Wyandt, a barber, was arrested and convicted of practicing medicine without a license.

At Atlanta the Anti-Tuberculosis Association has issued a complaint directed against the travel of consumptives. It takes the position that treatment can be carried out with equal advantage at home and that their presence on the common carriers is a menace to the public.

Dr. Claud Griffin and Miss Caroline Clair Stewart, both of Carrollton, were married on December 23, 1916.

It is believed that when the British steamship Voltair was sunk by a German raider recently Dr. Herbert D. Snyder, of Atlanta, ship physician, was lost.

Deaths

Dr. L. L. Moye, aged 38, of Vidalia, died in San Antonio, Tex., on January 14.

Dr. W. B. Burroughs, aged 74, died at his home in Brunswick on January 21.

Dr. W. B. Yancey, aged 49, died at his home in Atlanta on January 3.

Dr. J. J. Lee, aged 33, died at his home in Augusta on January 12.

KENTUCKY

The Central Kentucky Medical Association at its recent meeting in Danville elected the following officers: President, Dr. Virgil Kinaird, Lancaster; Vice-President, Dr. G. D. Johnson, Lancaster; Secretary, Dr. J. Tom Price, Harrodsburg.

At Louisville Dr. W. Ed. Grant, City Health Officer, has prepared a list of questions on the subject of sanitation which will be used in the public schools of the city. These questions are phrased in simple terms and the answers are attached, and it is hoped that they will "do their bit" in the prevention of disease.

At Louisville a test case is being fought out in the courts to determine whether it is illegal for a trained nurse to administer a general anesthetic.

Deaths

Dr. William A. Young, Newport, aged 46, died at a local hospital on December 21.

Dr. Charles H. Mullen, aged 78, died at his home in Foster on January 12.

Dr. William F. Phillips died at his home in Wilmore on January 19.

Dr. John E. Younglove, aged 90, died at his home in Bowling Green on January 2.

Dr. Sidney S. Pruitt, aged 55, died at his home in Holland on January 10.

Dr. Albert W. Sharp, aged 59, died at his home in Kettle on January 2.

Dr. E. M. Gobber, aged 61, died at his home in Cadiz on January 5.

Dr. J. M. Skaggs, aged 60, was found dead in his buggy near Cadiz on January 5.

Dr. C. E. Martin, aged 47, a native of Ballard County, died at his home in Caruthersville, Mo., on February 3.

Dr. William Doores, aged 87, died in Crab Orchard on February 9. He was a Captain in the Medical Corps of the Confederate Army and had practiced medicine for about fifty years.

LOUISIANA

At New Orleans a concert and dance was recently given for the benefit of the Orleans Parish Medical Society Library Fund. The entertainment was very successful and it was reported that approximately $2,000 was raised.

Deaths

Dr. J. P. Harrison, Hammond, died at New Iberia on December 16, 1916.

Dr. C. P. Wilkinson, aged 65, died at his home in New Orleans on January 31.

Dr. A. W. Harrington, aged 76, formerly of New Orleans, died at his home in Esther on December 31.

Dr. W. A. Jones, aged 61, died at his office in Colfax on January 4.

MARYLAND

At Baltimore pneumonia has been added to the list of reportable diseases.

At Baltimore Johns Hopkins Medical Department is giving two hours a week to the instruction of students in war measures.

At Baltimore Dr. H. H. Johnson has been placed at the head of Sydenham Hospital with a salary of $2,000 a year. It will be used by the city in connection with the department of preventable diseases.

At Baltimore a general campaign against the employment of typhoid carriers in places where food for public consumption is handled has been inaugurated by the city health department. Also as a final step in the anti-typhoid campaign all private wells have been ordered closed.

At Cumberland arrangements have been made with the U. S. Department of Agriculture for the demonstration of a newly invented sterilizer for dairy utensils. This outfit, which can be made at home, will be demonstrated to the milk producers in the near future.

Albert Muller, Baltimore, was recently arrested and fined for practicing medicine without a license.

At Annapolis Surgeon T. Clark, U. S. P. H. S., was recently engaged in making mental examinations of the inmates of the National Junior Republic.

Dr. Karl H. Van Norman, recently of Johns Hopkins Hospital, has been appointed assistant to the chief of the Canadian hospitals in England.

Due to the efforts of Dr. Arthur P. Herring, retary of the State Lunacy Commission, a movement is on foot to organize a hospital exchange where the work of physically and mentally handicapped persons will be exhibited for sale.

(Continued on page 30)

Chronic Constipation of Elderly Persons

is *particularly* amenable to the lubricating action of **INTEROL,** because with age, there is apt to be a decrease or cessation of natural lubricant in the gut. The mucus-follicles are often atrophied or even absent, so that they *cannot* supply the necessary lubrication.

INTEROL, in such cases, serves as the next best lubricant to Nature's own lubricant — mucus — and supplies, without the irritation of castor oil or cathartics, the lubrication necessary to the easy passage of feces through the bowel. It is just as slippery in the sigmoid and rectum, as in the colon. **INTEROL** has an all-the-way action.

INTEROL is a *particular kind* of "mineral oil," and is not "taken from the same barrels as the rest of them"; (1) there is no discoloration on the H_2SO_4 test—absolute freedom from "lighter" hydrocarbons, so that there can be no renal disturbance; (2) no dark discoloration on the lead-oxide-sodium-hydroxide test—absolute freedom from sulphur compounds, so that there can be no gastro-intestinal disturbance from this source; (3) no action on litmus—absolute neutrality; (4) no odor, even when heated; (5) no taste, even when warm. The elderly person can "take" **INTEROL.**

Pint bottles, druggists. **INTEROL** booklet on request; also literature on "Chronic Constipation of Elderly Persons."

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In Scarlet Fever and Measles

there is no procedure that will contribute so markedly to a patient's comfort and well-being and at the same time prove so serviceable from prophylactic standpoints, as anointing the whole body at frequent intervals with

K-Y Lubricating Jelly

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Itching and irritation are relieved at once, and while the activity of the skin is maintained, the dissemination of infectious material is also prevented. So notable are the benefits that result from the use of this **non-greasy, water-soluble** and **delightfully clean** product that its use has become a matter of routine in the practise of many physicians.

In addition to being "the perfect lubricant," K-Y has also been found an ideal emollient, and in no way does it demonstrate its great utility more convincingly than in the care of the skin during the exanthematous affections.

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Neuralgia is Painful

But it usually becomes *less* painful if the part is massaged with

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No fat. Washes right off. Doesn't blister. At druggists, collapsible tubes, 50c. Samples and literature.

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(Continued from page 28)

Dr. George H. Hocking, of the State Lunacy Commission, was seriously injured recently when an insane patient shot him.

Dr. Howard H. Kelly, Baltimore, is reported to be recovering rapidly from an attack of pneumonia in Florida.

Dr. Robert P. Bray, Baltimore, was married to Miss Nancy McNabb on December 23.

Deaths

Dr. James A. Fechtig, aged 68, died at his home in Baltimore on January 18.

Dr. I. D. Chaney, aged 35, died at his home in Mount Airy on January 25.

Dr. C. M. McLaughlin, aged 53, died at his home in Green Castle on January 6.

Dr. Harry W. Stoner, aged 44, died at his home in Baltimore on January 4 of pneumonia.

Dr. Benjamin R. Ridgely, aged 93, died at his home in Baltimore on February 2.

Dr. Alexander H. Saxton, aged 75, died at his home in Baltimore on December 24.

Dr. J. H. Billingslea, aged 73, died at his home in Westminster on January 29.

Dr. John W. Chambers, aged 64, Baltimore, died at DuBois, Pa., on January 21.

Dr. Pearce Kintzing, aged 55, died at his home in Baltimore on January 31.

Dr. F. W. Fochtman was found dead in his automobile near his home in Cumberland on January 6.

Dr. A. H. Saxton, aged 75, died at his home in Baltimore on Dec. 24.

Dr. W. P. Miller, aged 46, died at his home in Hagerstown on Oct. 6 from pneumonia.

Dr. William J. Dillenback, aged 51, died at his home in Brentwood on Dec. 27.

MISSISSIPPI

At Greenville, according to a recent report of County Health Officer Dr. O. W. Stone, there has been a great improvement in the health of the community, brought about by the active sanitation measures carried out recently.

At Laurel the Jones County Medical Society held its annual banquet on February 7.

At Hattiesburg Dr. Robert Donald appeared before the board of supervisors and urged the need of a full-time health officer.

At Jackson physicians from Hinds, Rankin, Madison, Claiborn, Yazoo and Scott met recently and organized themselves into an association.

Dr. W. S. Leathers, who has been connected with the State Board of Health for about seven years, was elected Secretary and Executive Officer of the Board on January 2.

MISSOURI

A chiropractic bill recently introduced before the house was defeated.

At Kansas City the health department has recently been reorganized. There are two main divisions, namely, the hospital and relief division and the health and sanitation division, each of which will be under a superintendent, and both will be under the charge of a health director.

At a recent meeting of the St. Louis Medical Society the proposed workman's compensation law was voted an endorsement.

At Kansas City physicians and business men recently began a campaign to raise the amount of $25,000 for the equipping of a hospital unit which will be sent to the front in the event of war.

At Joplin on February 6 there was held the annual banquet of the Jasper County Medical Society.

At Poplar Bluff, according to a recent action of the school board, teachers will keep a close watch on their pupils for infectious diseases and will be empowered to call in the aid of members of the county medical society if disease is suspected.

At both Kansas City and Maryville an active enforcement of the anti-spitting ordinances is being carried out, and the aid of the police department is being asked.

At St. Louis, in the first biennial report of the State Commission for the Blind, there are recommended laws requiring the reporting of sore eyes in infants by the midwives in charge of the case within 24 hours after discovery. A great deal of blindness is attributed by the commission to the carelessness of midwives.

At Kansas City a school of hygiene has been opened and attendance of all employes of the health department is obligatory.

Dr. D. S. Watts, Joplin, was recently arrested and fined $600 for violations of the federal anti-narcotic law.

Dr. J. S. Young, St. Louis, has sailed for France, where he will see service with the Harvard unit.

Dr. W. L. Hanson, Belleville, has gone to London, where he will enter the British military hospital service.

Dr. E. E. Kneale, St. Louis, was married to Miss Mae Michenfelder on January 30.

Deaths

Dr. I. F. Perry, aged 43, died in a hospital in Linneus on January 15.

Dr. W. S. Harwood, aged 77, died at his home in Monroe City on February 13.

Dr. Horace A. Talley, aged 56, was killed in Wentzville on January 30, when a Wabash train crashed into his car at a crossing.

Dr. V. A. Dial, aged 35, died at his home at Senath on January 7.

Dr. P. A. Pfeffer, aged 40, died in a St. Louis hospital on January 4 from septicemia, following the bite of a dog.

Dr. D. B. Farnsworth, aged 67, died at his home in Springfield on January 22.

Dr. Samuel J. Dewey died at his home in Breckenridge on January 10.

Dr. James H. Hedgpeth, aged 61, died at his home in Rockport on January 5.

Dr. Samuel West, aged 61, died at his home in Idalia on January 22.

Dr. T. B. Taylor, aged 40, died at his home in St. Louis on January 9.

Dr. Z. T. Blackwell, aged 58, died at his home in Joplin on February 10.

Dr. A. J. Steele, aged 82, died at his home in St. Louis on January 8.

Dr. W. A. Kendall, aged 76, died at the home of his sister in Briggsville on January 2.

(Continued on page 32)

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Absolutely Pure

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Made from Cream of Tartar derived from grapes—a natural food—as contrasted with materials derived from mineral sources used in cheaper baking powders.

No Alum

No Phosphate

(Continued from page 30)

NORTH CAROLINA

On January 27 the upper house of the general assembly passed a bill prohibiting the sale or advertising of "patent" proprietary medicines purporting to cure the so-called incurable diseases.

At Gastonia during the recent meeting of the Methodist Episcopal Church, South, it was decided to erect a $150,000 general hospital in the state, the site to be designated later.

Dr. J. N. Hill and Miss Kathryn Bayliss, both of Murphy, were married on January 4.

Deaths

Dr. William L. Crump, aged 60, died at his home in Salisbury on January 16.

Dr. W. T. Paul, aged 69, died at the Soldiers' Home in Raleigh on January 1.

Dr. H. T. Bahnson, aged 71, died at his home in Winston-Salem on January 16.

OKLAHOMA

At Oklahoma City, Chemistry Hall, the new science building erected on the campus of the University of Oklahoma, was dedicated on January 27.

At Enid at the recent meeting of the Oklahoma Central Medical Association the following officers were elected: President, Dr. L. H. Buxton, Oklahoma City; Vice-President, Dr. W. L. Kendall, Enid; Secretary-Treasurer, Dr. William H. Bailey, Oklahoma City.

At Marietta it was recently reported that Dr. B. S. Gardner sustained a dislocated hip.

At Freedom recently Dr. O. R. Gregg received some painful, though not serious, injuries when his automobile ran into a barbed wire fence.

Dr. J. A. Rutlidge, Woodville, was married to Miss Aline Colby, Ada, on January 3.

Dr. B. W. Ralston, Lindsay, was married to Miss Sue Koontz, Okemah, on January 1.

Deaths

Dr. T. G. Welch, aged 80, died at his home in Mt. Scott on December 21.

Dr. R. D. Reynolds, aged 58, Mountain View, died at the home of his son on January 9.

Dr. Black died at his home near Tecumseh on February 4.

SOUTH CAROLINA

At Columbia the budget of the health department was reduced about $20,000.

At Greenville the board of health has presented to the city council resolutions to the effect that the health commissioner's salary shall be raised from $1,800 to $2,100 per year.

At Sumter the board of county commissioners refused to appropriate the $2,000 necessary to meet the appropriation of the State Board of Health, and by so doing rejected the opportunity of having a health survey of the county.

At Greenville it has recently been reported that the city has purchased the hospital owned by the Hospital Association and will utilize $60,000 obtained from a recent bond issue for the erection of a new building.

Deaths

Dr. J. H. Allen, aged 48, died at his home in Spartanburg on January 25.

Dr. C. M. Kuykendall, of Rock Hill, died on January 5.

TENNESSEE

At Nashville the county board of education has asked the county court for an appropriation which is to be used in the medical inspection of school children.

At Memphis at a recent meeting of the medical society the following officers were elected for the ensuing year: President, Dr. W. B. Burns; Dr. W. F. Clary, Vice-President; Dr. R. H. Miller, Secretary, and Dr. Battle Malone, Censor.

The Supreme Court in a recent opinion upheld the Tennessee Vital Statistics Act.

At Memphis on December 12 and 13 there was held the first meeting of the American Board of Ophthalmic Examiners. The duties of this board are to examine into and certify to the qualifications of those wishing to practice this specialty.

At Chattanooga on January 5 the Hamilton County Medical Society and the Chattanooga Academy of Medicine held their annual banquet at the Mountain City Club.

There has been quite an epidemic of measles reported at the Central Hospital for the Insane, near Nashville.

At Memphis the Medical Department of the University of Tennessee has introduced a course in military hygiene and surgery.

Deaths

Dr. H. B. Sanford, aged 35, died at his home in Memphis on January 9 of tuberculosis.

Dr. W. B. York, aged 75, died recently at his home in Chestnut Bluff.

Dr. J. H. Wilkerson, aged 50, died at his home in Knoxville on January 2.

Dr. J. R. Harris died at his home in Paducah, Ky., on February 13 and was buried in Clarksville.

Dr. J. M. Wood, aged 82, Quebeck, died at the home of his son-in-law at Hohenwald on February 11.

Dr. Z. N. Young, aged 75, died at his home in Lafayette on January 17.

TEXAS

A bill has recently been introduced in the senate which it is thought will greatly reduce the sale of patent medicine if passed. It provides that no medicine containing over 2 % alcohol shall be sold by druggists unless by a physician's prescription or unless the druggist has a retail liquor license.

At a meeting of the American Association of Medical Colleges held at Chicago recently Dr. W. S. Carter, Dean of the Faculty of the Medical Department of the University of Texas, at Galveston, was elected President.

The annual conclave of the Phi Chi Medical Fraternity was held at Galveston on December 29 and 30. Chicago was selected as the next place of convention.

(Continued on page 34)

TEMPERED GOLD Hypodermic Needles

possess the rigidity of steel without its brittleness or tendency to break.

A Distinct Advance in Hypodermic Asepsis

Rust-proof, germ-proof, acid-proof. Can not corrode under any conditions, climatic or otherwise. Durability practically unlimited. Sterilizable by all usual methods without injury.
One needle used for over 7,000 mercurial injections is still in perfect condition. An obvious economy.

If not obtainable of your dealer, we will send you a sample needle for $1.00, or a half dozen assorted sizes, up to one inch, for $4.50, post-paid.

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Soft, flavory wheat rolled into luscious flakes, hiding 25 per cent of unground bran. A famous breakfast dainty.

Pettijohn's Flour is 75 per cent fine patent flour mixed with 25 per cent tender bran flakes. To be used like Graham flour in any recipe; but better, because the bran is unground.

The Quaker Oats Company
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(Continued from page 32)

Deaths

Dr. N. J. Phenix, aged 54, was killed at Colorado on December 30.

Dr. W. G. Jameson died at his home in Palestine on February 13.

Dr. John J. Devine, aged 65, died at his home in Tom Bean on January 19.

Dr. James E. Lay, aged 74, died at his home in Halletsville on December 13 from tuberculosis.

Dr. W. C. Kluttz, El Paso, died early in January from typhus fever contracted while discharging his duty as City Health Officer.

Dr. W. J. W. Kerr, aged 82, died at his home in Corsicana on November 12.

Dr. Charles I. White, aged 44, died at the home of his daughter in Christine on December 24.

Dr. G. H. Moeller, of Richards, committed suicide in Tulsa, Okla., on January 2.

VIRGINIA

Accepting the suggestion made by the Council of National Defense, the medical colleges of Virginia are introducing courses of military hygiene and surgery.

At Lynchburg, for the month of December, the death rate per 1,000 population, including nonresidents, was 8.9, the white rate, excluding nonresidents, being 5.4. This is said to be the lowest rate ever reported for that city.

At Norfolk the $42,000 endowment fund of the Protestant Hospital received an addition lately, when, by the legacy of the late Miss Mary McKey, $8,000 was donated to the institution.

Dr. E. M. Corns, Gate City, has gone to England, where he will be in the British medical service.

Deaths

Dr. Bernard H. Walker, aged 91, died at the home of his son at Alogonquin Park, Norfolk, on January 1.

Dr. Charles H. Gibbs, aged 64, died at his home in Charlotte on January 20.

Dr. Thomas N. Jacob, aged 46, died at his home at Dalbys, near Cape Charles, on December 5.

Dr. J. W. Anderson, aged 83, died at his home in Richmond on January 11.

WEST VIRGINIA

A bill recently pending in the house provides for the appointment by the medical society of a hotel inspector at a salary of $2,400 annually and gives him one assistant.

At Morgantown it has been reported that the West Virginia University School of Medicine has recently been placed in class "A" by the American Medical Association.

At Elkins Past Assistant Surgeon J. P. Leake, Assistant Surgeon Joseph Bolton and Assistant Surgeon H. F. Smith, all of the United States Public Health Service, were engaged recently in investigating a reported outbreak of poliomyelitis.

Dr. C. F. Ice, Mannington, has been reported to have been seriously ill recently.

At the meeting of the Southern Surgical and Gynecological Society held at White Sulphur Springs, early in December the following officers were elected: President, Dr. William D. Haggard, Nashville, Tenn.; Vice-Presidents, Drs. J. Earnest Stokes, Salisbury, N. C., and Dr. F. R. Hagener, Washington; Secretary, Dr. H. A. Royster, Raleigh, N. C., and Treasurer, Dr. Lagrande Guerry, Columbia, S. C.

At Charleston the City Council had under its consideration recently an ordinance requiring the cleaning of milk bottles after being used.

At Wheeling there was held a meeting of the State Health Council on Nov. 27 at which a number of candidates for license to practice in the State were examined.

Dr. W. H. Triplett, Matewan, and Miss Emma Archer, Baltimore, were married on June 14.

Deaths

Dr. H. E. B. Kramer, aged 80, died on January 17 at his home in Smithtown.

Dr. William H. Horner, aged 76, died at his home on Duck Creek, on February 11.

Dr. Thomas M. Stone, aged 79, died at his home in New Martinsville on January 27

Dr. Hugh Green, aged 75, died at his home in Faquire County on Nov. 4.

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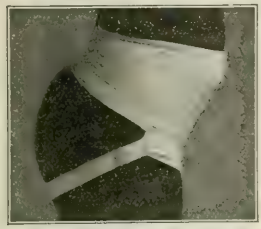

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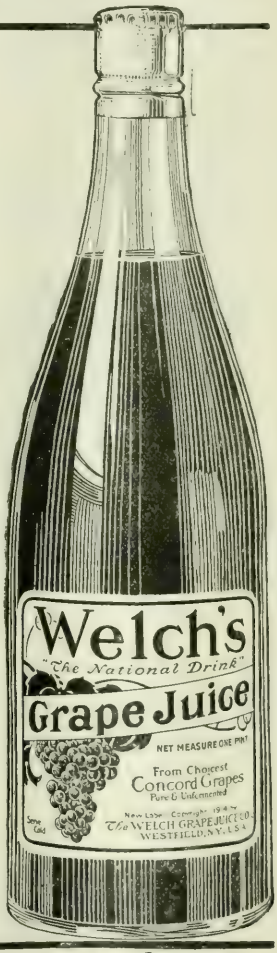

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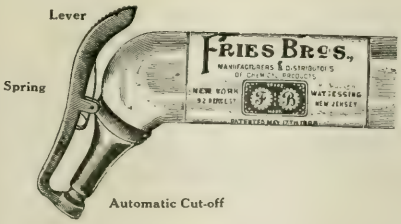

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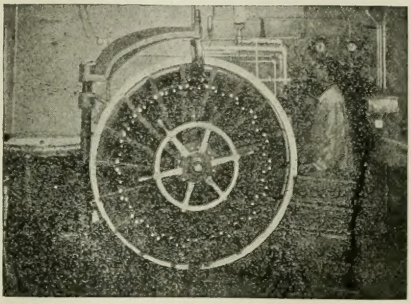

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5	Caffeine and Soda Benzoate, 0.5 Gm. (7 1-2 gr.)
9	Camphor, 0.1 Gm. (1 1-2 gr.). Oil of Sweet Almond, 1 mil
10	Camphor, 0.2 Gm. (3 gr.). Oil of Sweet Almond, 1 mil
12	Cornutol, 2 mils (c.c.)—vacule ampuls
14	Emetine Hydrochloride, 0.005 Gm. (1-12 gr.)
15	Emetine Hydrochloride, 0.02 Gm. (1-3 gr.)
16	Emetine Hydrochloride, 0.032 Gm. (1-2 gr.)
17	Emetine Hydrochloride, 0.04 Gm. (2-3 gr.)
24	Iodine Solution, 3 5 per cent in 1-mil ampuls. "First Aid Ampuls."
35	Mercuric Chloride Corrosive, 0.01 Gm. (1-6 gr.)
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43	Morphine Hydrochlor., 0.016 Gm. (1-4 gr.)
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45	Morphine Sulphate, 0.008 Gm. (1-8 gr.)
46	Morphine Sulphate, 0.016 Gm. (1-4 gr.)
47	Morphine and Atropine No. 1. Morphine Sulphate, 0.016 Gm. (1-4 gr.) Atropine Sulphate, 0.0004 Gm. (1-150 gr.)
51	Pituitary Extract, physiologically tested, 1-2 mil (c.c.)
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54	Quinine Dihydrochlor., 0.25 Gm. (3 3-4 gr.)
55	Quinine Dihydrochlor., 0.5 Gm. (7 1-2 gr.)
58	Quinine and Urea Hydrochlor., 1 per cent
61	Sodium Cacodylate, 0.1 Gm. (1 1-2 gr.)
62	Sodium Cacodylate, 0.2 Gm. (3 gr.)
64	Sodium Cacodylate, 0.5 Gm. (7 3-4 gr.)

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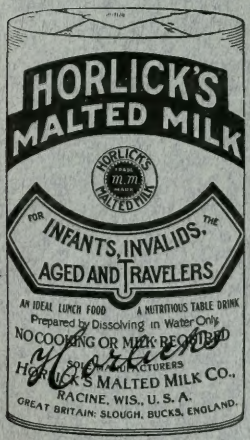
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This is true of the commonly used acid salts of mercury like bichloride.

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